3 AFFECTED ENVIRONMENT

3.1 Planning Area Profile

The Planning Area encompasses the entire Andrews RA and the portion of the Three Rivers RA within the CMPA. This chapter describes the current condition, amount, location, use, and demands of each of the resources in the Planning Area that could be affected by the actions described in Chapter 2. Physical characteristics such as geology and climate are incorporated into the description of the physical environment. Although they should not be affected by the management actions, they are a part of the physical environment in which management actions would be taking place.

Health and safety is a required management component that will not change by alternative or be affected by the various management actions. Protection of the public will be provided under all of the alternatives and will include such measures as aiding law enforcement agencies with search and rescue efforts and posting signs to alert the public to hazardous elements and locations within the Planning Area.

3.1.1 Physical Characteristics

The Planning Area lies in the northwest portion of the Great Basin in the Basin and Range Physiographic Province. Drainage is generally internal with no outlet to the sea, with one exception: the Crooked-Rattlesnake drainage extends into the northeastern part of the Planning Area and is a tributary to the Owyhee River.

The oldest rocks in the Planning Area are limited to the Pueblo Mountains. They consist of metamorphosed volcanic rocks that are approximately 150 to 200 million years old. They were intruded by quartz-rich rock approximately 180 million years ago.

The next oldest rocks in the Planning Area are approximately 18 to 23 million years old and are exposed only at the base of the east side of Steens Mountain. They consist primarily of rhyolitic and andesitic lava flows and tuffaceous sediments.

The Basin and Range Province began to evolve approximately 18 million years ago as a result of regional east-west extension. The regional extension includes all of the Planning Area and was accompanied by extrusion of Steens Basalt lava flows approximately 16 million years ago over an area 100 by 180 miles.

Approximately 15 million years ago, volcanic ash erupted from calderas located northeast of Pueblo Peak, south of present day Whitehorse Ranch, and in the vicinity of what is now McDermitt, Nevada. These eruptions resulted in thick deposits of welded tuffs in the eastern part of the Planning Area. Additional volcanic ash erupted from calderas located near present day Burns approximately 9.5 and 6.5 million years ago, resulting in welded tuffs in the northern half of the Planning Area.

About ten million years ago, regional uplift and movement on faults in the Basin and Range Province formed fault-block mountains and intervening broad valleys. Fault movement continues today. Steens Mountain is a fault-block mountain that dips gently westward and is characterized by its precipitous east-facing 5,500-foot high escarpment overlooking Alvord Valley.

The elevation of 9,500 feet on top of Steens Mountain allowed the formation of alpine glaciers less than one million years ago. The glaciers took the form of an ice cap on top of Steens Mountain during an earlier glacial advance (the Fish Lake advance) and were confined to river valleys during a later glacial advance (the Blitzen advance). The valley glaciers carved gorges 2,000 feet deep that expose layers of the Steens Basalt. The Steens Basalt has a total thickness of approximately 3,000 feet.

Between 24,000 and 12,000 years ago, pluvial lakes occupied Alvord/Pueblo, Blitzen, and Catlow Valleys. The lakes formed due to increased precipitation and slightly warmer temperatures from a climate change that occurred several thousand years after the glaciers were at their peak. During this time, landslides formed along the east side of Steens Mountain and Ancient Lake Alvord spilled eastward into the Crooked-Rattlesnake drainage through Big Sand Gap. The Alvord Valley contains more than 1,000 feet of sediment eroded from the surrounding mountains and hills.

Weather in the semiarid Planning Area is the result of maritime air moving eastward from the Pacific Ocean over the Coast and Cascade Mountain ranges. As air masses rise to cross these mountains, much of the moisture in the air condenses and falls to the ground, making the air relatively dry by the time it reaches southeastern Oregon. There is an abundance of sunshine and a wide range between maximum and minium daily temperatures.

Average annual precipitation in the region is between eight and 14 inches, with some isolated areas receiving up to 30 inches or more. Most of the precipitation occurs from November through February, with about one-third falling as snow. The amount of precipitation in a particular location depends on topography; the higher the elevation, the greater the precipitation.

Thunderstorms, occasionally accompanied by hail, typically occur each year over virtually every part of the Planning Area. High-intensity thunderstorms occur between April and September; storms during June or July are typically drier than those in August or September. At elevations below 6,000 feet the snowpack usually melts by April; at higher elevations it remains until mid-June. Localized flooding often follows spring snowmelt.

Generally, the last spring frost occurs by May 30 and the first frost of autumn by September 2. The frost-free period (temperatures above 32° F) varies from 139 days at the lower elevations to 74 days at higher elevations; however, frost may occur during any month of the year.

The prevailing winds are west-southwest, with the most intense winds during March and April. December and January are the calmest months.

3.1.2 History of the Planning Area

Archaeological evidence indicates that the Planning Area has been inhabited by humans for the last 10,000 years. Prehistoric occupation has been continuous, although population density and patterns of use have varied according to changing climatic cycles. Small, highly mobile family groups of hunters and gatherers were the norm during most of the yearly subsistence round even though larger groups gathered at winter camps in the valley bottoms.

Archaeological sites, the material remains of this prehistoric presence, are a commonplace yet fragile reminder of prehistoric activity in the Planning Area. Prehistoric sites include stone flake scatters, larger more complex campsites, toolstone quarries, rock shelters and caves, rock art and rock structures such as rock rings (wickiup supports), rock cairns, and hunting blinds.

The Burns Paiute Tribe and other Northern Paiute people are descendants of these prehistoric people. Many of the elders and younger tribal members have continued traditional practices such as marmot hunting, root gathering, and fruit harvesting.

Fur trappers were the first Euro-Americans to visit the Steens Mountain area in a brief foray in 1826. The next visitors came in the 1840s and 1850s. The area was settled in the 1870s and the most arable land with water was claimed shortly thereafter. Just after the beginning of the 20th century, a brief dry-land farming boom occurred to the west in Catlow Valley. By 1920, however, most settlers were driven away from the Steens area by cold winters, summer frost, and drought. The Riddle brothers, who ranched on the Little Blitzen River, were an exception. They settled the 1,220 acre ranch in the late 1800s and it was operated continuously until 1986 when the BLM acquired the property and designated it a National Register Historic District.

In the early 20th century, Basque sheep herders moved onto Steens Mountain and the surrounding rangeland. Many eventually became ranch owners, leaving their marks in the form of place names, cabins, carved aspen, sheep camps and numerous rock cairns.

Historic sites in the Steens Mountain area include wagon roads, homesteads, the town sites of Andrews and Diamond, Basque sheep camps with carved aspen, Rose Valley Borax Works at Borax Lake, and historic trash dumps. The Riddle Brothers Ranch National Historic District is a complex of well-preserved historic buildings, several willow fences, corrals, and rock walls. The BLM has restored four of the buildings and stabilized the others. In addition to the historic component, the district contains at least 48 prehistoric sites.

3.2 Air Quality

Under criteria established through the CAA as amended in 1990, the Planning Area has been designated as Class II. This means that air quality is good to excellent; however, the potential to impact Class I airsheds (i.e. Strawberry Mountain Wilderness) does exist and additional measures will be required to avoid those impacts. Strawberry Mountain Wilderness, which is 65 miles northeast of the Planning Area, is the closest Class I airshed. The nearest Nonattainment

Area is Lakeview, Oregon. The air pollutant of most concern on BLM administered land is particulate matter, which may originate from fire, road or windblown dust, and vehicle use. Most of this particulate matter is produced from fire and is less than ten microns in diameter (called PM_{10}).

3.3 Water Resources

The Planning Area contains portions of six subbasins: Guano, Harney/Malheur Lakes, Alvord Lake, Donner und Blitzen, Thousand-Virgin, and Crooked-Rattlesnake. The entire Planning Area is within an internally drained basin, with the exception of the Crooked-Rattlesnake subbasin on the eastern edge of the Planning Area, which drains to the Snake River via the Owyhee River. The topographic features of these large areas direct surface and some shallow subsurface water to streams, rivers, lakes, reservoirs, or playas.

The major portions of the Planning Area (Guano, Harney/Malheur Lakes, Alvord Lake, and Donner und Blitzen subbasins) are part of the larger Oregon Closed Basins Subregion and the Pacific Northwest Region. The eastern portion of the Planning Area (Crooked-Rattlesnake subbasin) is part of the Middle Snake Subregion and the Pacific Northwest Region. The southwest portion of the Planning Area (Thousand-Virgin subbasin) is part of the Black Rock Desert-Humboldt Region and the Great Basin Region. Regions, subregions, basins, and subbasins are delineated based on protocol defined by the USGS. This system delineates a hierarchy of geographical regions and their subparts such as subregion, basin, subbasin, watershed, and subwatershed. Each hydrologic unit is referred to as a field and given a two-digit numeric identifier. The code, called a HUC, is a unique numeric identifier. Table 3.1 describes the subbasins in the AMU. Table 3.2 describes the subbasins in the CMPA.

The BLM maintains water rights and uses in accordance with Oregon law. In Oregon, water is publicly owned. Permits for use must be obtained from the Oregon Water Resources Department (OWRD), with some exceptions. Laws pertaining to the use of surface water and ground water are based on the principle of prior appropriation ("first in time, first in right") and limited to the quantity of water needed to satisfy the specified use without waste. Therefore, the first person to obtain a water right will be the senior holder on a particular stream and has priority over all junior claims in times of water shortage.

The State of Oregon recognizes instream water rights for the public benefit to maintain flows to protect recreation, fish, wildlife, and other river related resources. Instream water rights are applied for by the DEQ, Department of Parks and Recreation, and ODFW to the state's Water Resources Commission. The priority date for instream water rights is the date the application is submitted to OWRD.

Current BLM and USDI policy is to use the state's instream flow water right process to protect flow-dependent values, such as ORVs, for designated streams and rivers pursuant to the WSR Act. The WSR Act reserves the minimum quantity of water necessary to maintain the values for which the river was designated. A federal reserved water right is authorized by the WSR Act with the priority date assigned to the date of designation. However, a federal reserve water right is not formally recognized until assigned through the state's water rights adjudication process. In the event that flow-dependent values are threatened, the BLM would seek cooperative solutions to promote adequate flow to protect WSR ORVs prior to exercising a federal reserved water right. This in no way abrogates the federal reserved water right.

Additionally, federal reserved water rights may be applied to certain springs and waterholes pursuant to Public Water Reserve No. 107, Executive Order of April 17, 1926. Public Water Reserve 107 reserves the amount necessary to support present and future uses by livestock and humans. This reservation is limited to springs and waterholes on lands within the public domain prior to April 17, 1926.

3.3.1 Surface Water

Watershed function in the form of capture, storage, and release of available precipitation regulates the timing, intensity, and duration of runoff through attributes of landform, soil, and vegetation. Capture and storage of precipitation occurs through upland and riparian landform features such as floodplain, meadows, swells, and ephemeral/intermittent lakes, as well as constructed facilities (soil and water detention structures and ephemeral/intermittent reservoirs). Upland and riparian vegetation further contribute to this process by trapping snow, disrupting overland and stream runoff, and maintaining soil structure, which facilitates infiltration. Water that infiltrates and percolates into and through the soil profile is available to sustain vegetation and contributes flow to seeps, springs, streams, and lakes. Stored water in

riparian systems and adjacent uplands subsequently releases as a cool water source that augments baseflow, buffers stream temperature, and provides habitat for aquatic species.

Table 3.1: Subbasins in the Andrews Management Unit

Subbasin	HUC	Total Acres[1]	USFWS	State Acres	Private Acres	BLM Acres	Stream Miles[2]
Guano	17120008	625,014	0	658	271,813	352,544	1,061
Harney/Malheur Lakes	17120001	2,567	0	0	14	2,553	5
Alvord Lake	17120009	748,442	0	5,595	117,946	624,901	2,258
Donner und Blitzen	17120003	86,405	26,677	30	35,011	24,688	284
Thousand-Virgin	16040205	171,333	0	0	2,055	169,278	597
Crooked-Rattlesnake	17050109	45,071	0	0	0	45,071	219
Total		**1,678,832**	**26,677**	**6,283**	**426,839**	**1,219,035**	**4,424**

[1] The total acres value covers the subbasin area within the AMU.
[2] The stream miles include all perennial, intermittent and ephemeral streams within the AMU. There are approximately 430 miles of perennial streams in the AMU.

Table 3.2: Subbasins of the CMPA

Subbasin	HUC	Total Acres[1]	State Acres	Private Acres	BLM Acres	Stream Miles[2]
Guano	17120008	73,679	0	2,839	70,840	189
Harney/Malheur Lakes	17120001	22,910	0	4,725	18,185	59
Alvord Lake	17120009	125,901	433	5,792	119,675	382
Donner und Blitzen	17120003	270,694	637	53,231	216,825	707
Total		**493,184**	**1,070**	**66,587**	**425,525**	**1,337**

[1] The total acres value covers the subbasin area within the CMPA boundary.
[2] The stream miles include all perennial, intermittent and ephemeral streams within the CMPA boundary. There are approximately 371 miles of perennial streams in the CMPA.

The Planning Area contains several perennial and intermittent reservoirs and lakes on both public and private lands. Reservoirs include Rock Creek, Three Mile, Skull Creek, V Lake, Sixmile, Lower Borax Lake, Krumbo, Kern, Larkspur, and Granddad. Lakes include Garrison, Borax, Tumtum, Juniper, Wildhorse, Little Wildhorse, Mann, Ten Cent, Lily, Pate, Fish, Lost, and Honeymoon.

The Planning Area contains approximately 5,760 miles of ephemeral, intermittent, and perennial streams, of which 800 miles are considered perennial. Most surface runoff is from snowmelt or rainfall at the higher elevations, producing peak discharges in the spring and early summer. Many of the streams in lower-elevation semiarid areas are either intermittent, with segments of perennial flow near springs, or ephemeral, with flow only during spring runoff and intense summer storms.

3.3.1.1 Surface Water Quality

The EPA delegated authority to the DEQ to implement the CWA. The objective of the CWA is to restore and maintain the physical, chemical, and biological integrity of the nation's waters. To implement the CWA, the State of Oregon develops and adopts water quality standards, which include beneficial uses, narrative and numeric criteria, and anti-degradation policies. Oregon's water quality standards are contained in OAR 340 Division 41. Section 303(d) of the CWA requires the state to identify those waters not meeting the water quality standards, referred to as "water quality limited" or "impaired" and to develop TMDLs. The TMDLs describe the amount of each pollutant a waterbody can

receive without violating water quality standards. The schedule for completing TMDLs for subbasins in the Planning Area is 2003 for the Alvord Lake Subbasin and 2007 for the remainder. Table 3.3 and Table 3.4 list the streams in the AMU and the CMPA, which are 303(d) water quality limited streams.

Table 3.3: Water Quality Limited Streams within the Andrews Management Unit

Stream Name	Parameter	Segment	List Date
Harney/Malheur Lake Subbasin			
Riddle Creek	Temperature-Summer	River Mile 0 to 24.4	1998
Donner und Blitzen River Subbasin			
Bridge Creek	Temperature-Summer	River Mile 0 to 2.2	2002
McCoy Creek	Temperature-Summer	River Mile 0 to 26.2	2002
Guano Subbasin			
Home Creek	Temperature-Summer	River Mile 0 to 21.3	
Skull Creek	Temperature-Summer	River Mile 0 to 13.3	1998
Alvord Lake Subbasin			
Big Trout Creek	Temperature-March 1 to June 30 and Summer	River Mile 0 to 16.6	2002
Denio Creek	Temperature-Summer	River Mile 0 to 6.1	1998
East Fork Big Trout Creek	Temperature-March 1 to June 30 and Summer	River Mile 0 to 6.6	1998 and 2002
Little Trout Creek	Temperature-Summer	River Mile 0 to 9.3	1998
Little Whitehorse Creek	Temperature-Summer	River Mile 0 to 2.5	1998
Mosquito Creek	Temperature-Summer	River Mile 0 to 7.4	2002
Trout Creek	Temperature-Summer	River Mile 0 to 30	1998
Van Horn Creek	Temperature-Summer	River Mile 0 to 8.2	1998
Willow Creek (Steens Mountain)	Temperature-Summer	River Mile 0 to 5.3	1998

Table 3.4: Water Quality Limited Streams within the CMPA

Stream Name	Parameter	Segment	List Date
Harney/Malheur Lake Subbasin			
Riddle Creek	Temperature-Summer	River Mile 0 to 24.4	1998
Donner und Blitzen River Subbasin			
Ankle Creek	Temperature-Summer		1998
Big Indian Creek	Temperature-Summer		1998
Deep Creek	Temperature-Summer	River Mile 0 to 7.2	1998
Donner und Blitzen River	Temperature-March 1 to June 30 and Summer	River Mile 45.3 to 77.3	1998 and 2002
Fish Creek	Temperature-Summer	River Mile 0 to 7.5	1998

Stream Name	Parameter	Segment	List Date
Indian Creek	Temperature-Summer	River Mile 0 to 4.2	1998
Little Blitzen River	Temperature-Summer	River Mile 0 to 26.2	1998
McCoy Creek	Temperature-Summer	River Mile 0 to 26.2	2002
Mud Creek	Temperature-Summer	River Mile 0 to 4.8	1998
Guano Subbasin			
Home Creek	Temperature-Summer	River Mile 0 to 21.3	1998
Alvord Lake Subbasin			
Mosquito Creek	Temperature-Summer	River Mile 0 to 7.4	2002
Willow Creek (Steens Mountain)	Temperature-Summer	River Mile 0 to 5.3	1998

Through a MOA (USDI 1990), the DEQ recognizes the BLM as the Designated Management Agency responsible for implementing and enforcing natural resource management programs for the protection of water quality on public lands under its jurisdiction. This MOA recognizes that nonpoint source water quality issues are best controlled through the development, adoption, and implementation of sound resource management practices, referred to as BMPs. The primary cause of water quality degradation on public land is nonpoint source pollution. To further the purposes of this MOA and the CWA, the USFS and the BLM developed a Protocol for Addressing the CWA Section 303(d) Listed Waters (Protocol) (USDA/USDI 1999) in coordination with the EPA, DEQ and other agencies. The BLM is implementing the Protocol in Oregon and will establish, through another MOA with the DEQ, recognition of the Protocol as the vehicle for achieving water quality compliance.

3.3.2 Ground Water

The regional ground water gradients and the extent of aquifer systems within the AMU have not been studied. Ground water data are limited and are based on small isolated basin studies and well logs. The geology of the area is composed primarily of volcanic rocks. The water-bearing properties of these geologic formations depend largely on faults, fractures, joints, etc. The rate and quantity of ground water movement depends on the hydraulic conductivity of the geologic formation and the hydraulic gradient.

Ground water occurs as both confined and unconfined aquifer systems. Most unconfined aquifers are located in stream valleys or are associated with Pleistocene lakebeds that contain recent alluvial material; some may exist as perched aquifers. Alluvial aquifers vary greatly in size and yield from one stream/lakebed to another. These aquifers are important as transient storage systems to move ground water to or from streams and the deeper confined aquifers, and they are typical of drainages in the Planning Area. Perched aquifers occur along ridges between stream valleys and can usually be identified by the occurrence of springs above the valley bottoms. They are often associated with alluvial aquifers where streambeds intersect permeable outcrop areas.

Little is known of the areal extent or depth of the deep, confined bedrock aquifer systems. The DEQ has not identified any sole-source aquifers. The presence of numerous volcanic flows and faults does not support the concept of a uniform regional ground water gradient. Recharge to ground water systems occurs mainly at higher elevations where precipitation highly exceeds seasonal evapotranspiration. Precipitation is the major recharge source in areas with an exposed permeable formation and average annual precipitation in excess of 12 inches.

Ground water is used for domestic and livestock purposes and for irrigation. Ground water quality depends on the chemical makeup of the water-bearing formation. Most of the region contains good quality water, but the water is usually hard and contains moderate amounts of dissolved minerals. Minor exceptions are geothermal and hydrothermal waters that have concentrated elements such as arsenic, mercury, molybdenum, uranium, and selenium (Ferns et al. 1993a; Ferns et al. 1993b). Springs and seeps occur in areas where water from aquifers reaches the surface. Many springs begin in stream channels; others flow into small ponds or marshy areas that drain into channels. Some springs and seep areas form their own channels that reach flowing streams, but other springs lose their surface expression and recharge alluvial fill material or permeable strata. Inflow from riparian/hyporheic zones impacts baseflows and associated water temperature buffering and moderation. Water from springs differs from that of overland runoff in that it is generally more constant

in temperature and lower in dissolved oxygen, especially close to the source. Mineral content in water varies from spring to spring along stream courses, depending upon the geochemistry of the substrata through which it flows.

3.4 Soils and Biological Soil Crusts

Surface soils in semiarid southeastern Oregon are young and poorly developed. Chemical and biological soil-building processes such as rock weathering, decomposition of plant materials, accumulation of organic matter, and nutrient cycling proceed slowly in this environment. Since soil recovery processes are also slow, disruption of soils can lead to long-term changes in ecological status and productivity. In many areas, natural, or geologic, erosion occurs too rapidly for distinct, deep soil horizons to develop.

Soil productivity varies widely due to characteristics such as soil depth, nutrient status, available water-holding capacity, and site characteristics including elevation, aspect, and slope gradient. A productive ecosystem depends on maintenance of soil productivity. Current soil productivity reflects site-specific natural conditions and past management practices.

Surface management actions affect, to varying degrees, the following soil characteristics: soil bulk density (weight per unit volume), porosity (hydrologic conductivity), soil temperature, organic matter content, moisture content, and nutrient content. These factors in turn affect soil hydrologic response, productivity, nutrient cycling, water-holding capacity, and soil erosion rates.

Management practices may affect soil productivity by influencing soil characteristics and processes such as displacement, compaction, erosion, and alteration of organic matter and soil organism levels. Natural processes are slow to restore soil productivity in this semiarid region; therefore, prevention of soil degradation is an effective remedy.

Soil erosion varies throughout the Planning Area. In the semiarid portion of the SBR area, bare soil between plants comprises between 40 and 80 percent of the total ground cover of a native plant community, leaving large areas of exposed soil between plants to erode naturally. In addition to this background erosion rate, management regimes affect the rate at which soil erodes from a landscape. Any activities that remove vegetative cover increase the erosion rate. If the surface layers of vulnerable soils are washed or blown away, the productivity potential may be lost.

Historically, erosion occurred on upland soils and in drainage channels as a result of uncontrolled land use, prolonged drought, and catastrophic storms. Ephemeral drainages were deeply incised by gully erosion more than 30 years ago. Some geologic and localized erosion, caused by concentrated uses, still occurs. Introduced annual and perennial plants currently occupy many of these highly disturbed sites.

Current management practices have reduced erosion. These practices include proper stocking rates for livestock, rotation of grazing, improved designs of roads, rehabilitation of severely disturbed areas, restriction of vehicles to roads and trails, and control of concentrated recreational activities.

Biological soil crusts are also known as cryptogamic, microbiotic, cryptobiotic, and microphytic crusts, leading to some confusion. The names are all meant to indicate common features of the organisms that compose the crusts. The most inclusive term is biological soil crust, as this distinguishes them from physical crusts while not limiting crust components to plants. Whatever name is used, there remains an important distinction between these formations and physical or chemical crusts (Belnap 2003).

Identification of biological soil crusts at the species level is very difficult and is often not practical for field work. The use of some basic morphological groups simplifies the situation. Morphological groups are also useful because they are somewhat representative of the ecological function of the organisms (USDI Tech. Ref.1730-2). These basic morphological groups are cyanobacteria, algae, micro-fungi, short moss (under ten millimeters), tall moss (over ten millimeters), liverworts, crustose lichen, gelatinous lichen, squamulose lichen, foliose lichen, and fruticose lichen. The dominant groups represented in the Northern Great Basin include cyanobacteria, short moss, tall moss, crustose lichen, gelatinous lichen, and squamulose lichen. Algae and cyanobacteria are hard to observe without a microscope except where their presence affects soil characteristics. Micro-fungi are difficult to observe unless the fruiting bodies are present. The fruiting bodies tend to be very minute and often require an organic substrate to induce fruiting. Liverworts are present in some parts of the Planning Area on moist sites. Foliose and fruticose lichens are not commonly found in the Planning Area.

Biological soil crusts contribute to the functional, structural, and compositional parts of a functioning ecosystem. They function as living mulch by retaining soil moisture and discouraging annual weed growth. In some systems, they comprise up to 70 percent of the living cover. They reduce wind and water erosion, fix atmospheric nitrogen, and contribute to soil organic matter.

In the past, biological soil crust data specific to the Northern Great Basin have been lacking. New monitoring studies proposed for the Pueblo-Lone Mountain Allotment and other parts of the Planning Area will be utilized to inform decisions on future management actions.

The Planning Area was covered by an Order III soil survey completed in 1994 for the Harney County Area by the National Cooperative Soil Survey. Soil types are shown in Table 3.5, which describes the general types of soils found in the Planning Area.

Table 3.5: Soil Types in the Planning Area

Map No.	Soil Type	Description
1	Alvodest-Droval-Playas	Poorly to very poorly drained, very deep soils formed in lacustrine sediments on low lake terraces and basin floors; 0 to 3 percent slopes
2	Spangenburg-Enko-Catlow	Well or moderately well drained, very deep soils formed in lacustrine sediments and alluvium on middle lake terraces; 0 to 20 percent slopes
3	Atlow-Tumtum-Deppy	Well drained, very shallow or shallow soils formed in old alluvium, residuum, or colluvium on high lake terraces and low hills; 2 to 50 percent slopes
4	Gumble-Risley-Mahoon	Well drained, shallow or moderately deep soils formed in residuum and colluvium on hills and tablelands; 2 to 40 percent slopes
5	Felcher-Skedaddle	Well drained, very shallow to moderately deep soils that formed in colluvium and residuum on mountains; 20 to 70 percent slopes
6	Fury-Skunkfarm-Housefield	Somewhat poorly to very poorly drained, very deep soils formed in alluvium and lacustrine sediments on stream terraces, and lake terraces; 0 to 2 percent slopes
7	Poujade-Ausmus-Swalesilver	Moderately well and somewhat poorly drained very deep soils formed in lacustrine sediments, and alluvium on middle lake terraces; 0 to 5 percent slopes
8	Reallis-Vergas-Lawen	Well drained, very deep soils that formed in alluvium and eolian material on high lake terraces and fan terraces; 0 to 8 percent slopes
9	Baconcamp-Clamp-Rock outcrop	Well drained, shallow or moderately deep soils formed in residuum and colluvium; 5 to 80 percent slopes
10	Raz-Brace-Anawalt	Well drained, shallow or moderately deep soils formed in residuum and colluvium on tablelands having 8 to 12 inches of precipitation; 0 to 30 percent slopes
11	Ninemile-Westbutte-Carryback	Well drained, shallow and moderately deep soils that formed in residuum and colluvium on tablelands and hills having 12 to 16 inches of precipitation; 0 to 70 percent slopes
12	Merlin-Observation-Lambring	Well drained, shallow to very deep soils formed in residuum and colluvium on shrub and grass covered hills; 0 to 70 percent slopes

3.5 Vegetation

The existing vegetation in the Planning Area is discussed under four different communities or habitat types: riparian and wetlands, woodlands, WJMA, and rangelands. Noxious weeds are also discussed in this section. General Vegetation Types

in the Planning Area are listed in Table 3.6 and are broken out by the AMU and the CMPA. A complete vegetation list is in included in Appendix L.

Table 3.6: General Vegetation Types in the Planning Area

General Vegetation Type	AMU BLM Acres	CMPA BLM Acres
Unsurveyed/Unknown Vegetation Type	17,419	835
Annual Grassland	2,475	1,220
Crested Wheatgrass	9,014	12,506
Big Sagebrush/Crested Wheatgrass	13,333	6,882
Big Sagebrush/Perennial Grassland	457,672	84,939
Low Sagebrush/Grassland	104,681	130,419
Silver Sagebrush/Grassland	4,071	1,085
Black Sagebrush/Grassland	17,148	0
Mountain Big Sage/Perennial Grassland	15,463	41,584
Salt Desert Shrub/Grassland	200,967	321
Mountain Shrub/Grassland	7,658	6,538
Juniper/Big Sagebrush	1,083	52,659
Juniper/Low Sagebrush	1,740	51,128
Playas	36,141	395
Quaking Aspen	3,168	10,748
Native Perennial Grassland	2,785	8,425
Rabbitbrush/Grassland	8,883	5
Rock	1,512	1,466
Big Sagebrush/Annual Grassland	316,101	16,997
Total	**1,221,314**	**428,152**

3.5.1 Riparian and Wetlands

Riparian/wetland areas are water-dependent ecosystems bordering streams, springs, and lakes. They form ecological links between the terrestrial and aquatic components of the landscape. Riparian landform (flood plain), and vegetation and/or other structural components, such as woody debris and boulders, reduce erosion and dissipate stream energy or wave action (standing water) during high water events. Detention and storage of high flows reduce flood risks and contribute inflow during periods of receding water surface elevation or flow. Reduced bank erosion contributes to maintenance of water quality and general riparian integrity.

Riparian vegetation communities are influenced by landform, water availability, soil, elevation, and climate, as well as disturbance factors. These communities may consist of herbaceous or woody vegetation, or a combination of these two vegetation types. Presence and dominance are associated with the species' obligation or sensitivity to saturation, as well as the circumstances and conditions during which opportunities for establishment occur. Progression of a riparian community following changes in the physical characteristics of the site, particularly large changes in soil or water status, may result in a different Potential Natural Community (PNC) (USDI 1992, Procedures for Ecological Site Inventory).

Riparian vegetation communities in the Planning Area range from dominant woody tree/shrub species adjacent to moderate gradient streams to monotypic stands of sedge or rush associated with springs, saturated meadows, and low gradient stream reaches. Commonly observed woody riparian plant communities include cottonwood-willow, alder-willow, mixed willow, willow-chokecherry, and aspen. These communities may exhibit further diversity with additional

shrub or herbaceous species associated with colonization opportunities, such as localized bank disturbance, canopy openings, and increased solar exposure. Herbaceous communities such as grasses, rushes and sedges, are often associated with finer textured soils with species composition associated with the duration of saturation.

The majority of public land riparian areas associated with perennial streams was assessed using the PFC assessment between 1997 and 2000 (Table 3.7). Functioning condition of riparian/wetland areas is a result of interactions among geology, soil, water, and vegetation. PFC is an assessment of the physical function of riparian/wetland areas through consideration of hydrology, vegetation, and soil/landform attributes. This assessment utilizes existing site-specific inventory and monitoring information, as well as helping to identify management objectives and future monitoring. Definitions of the PFC ratings are identified below:

- Proper Functioning Condition: Riparian/wetland areas are functioning properly when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high water flows, thereby reducing erosion and improving water quality; to filter sediment, capture bedload, and aid in floodplain development; to improve floodwater retention and ground water recharge; to develop root masses that stabilize streambanks against cutting action; to develop diverse ponding and channel characteristics; to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and to support greater biodiversity.

- Functional at Risk: Riparian/wetland areas that are in functional condition, but an existing soil, water, or vegetation attribute makes them susceptible to degradation.

- Non-Functioning: Riparian/wetland areas that clearly are not providing adequate vegetation, landform, or large woody debris to dissipate stream energy associated with high flows, and thus are not reducing erosion, improving water quality, etc.

Riparian/wetland areas will function properly before they achieve an advanced ecological status or a theoretical "desired future condition." The range between PFC and an area's physical and biological potential becomes the "decision space" for social, economic, and other resource considerations.

Table 3.7: PFC Assessment for the AMU and CMPA

	AMU		CMPA	
Rating/Trend	**Miles**	**Percent**	**Miles**	**Percent**
PFC	106	67	185	75
FAR[1]/Upward	22	14	33	13
FAR/Non-Apparent	19	12	21	9
FAR/Downward	0	0	4.5	2
Non-Functioning	11	7	3	1
Total	158	100	246.5	100

[1] Functional at Risk

3.5.2 Woodlands

3.5.2.1 Quaking Aspen

Quaking aspen is found throughout the Great Basin in small to moderately sized patches. This tree species is often found on north slopes or areas where snow accumulates and persists later into the spring than in adjacent areas. Quaking aspen are unique in their ability to reproduce from seed or by sprouting from below-ground buds. The production of suckers (sprouts) greatly increases when overstory stems are removed by disturbances such as fire, wind, and cutting. Reproduction from seed is extremely uncommon due to exacting conditions required for germination and establishment (McDonough 1979). Quaking aspen form stands with an even-aged structure of dominant trees. These stands can be characterized as young, mature, or old (Wall 1999). Young stands are found shortly after disturbance, mature stands are

often 80 to 100 years old, and stands older than 120 years in age are classified as old (Bartos and Mueggler 1981). Old stands have signs of deterioration present in the form of numerous standing dead trees and trees with large portions of their canopies dead. Younger stands may appear to be quite productive with healthy overstory trees and dense understory production. DeByle (1985) stated that quaking aspen stands regularly produce over 2,000 pounds per acre in forage, over ten times that of some adjacent plant communities. Quaking aspen stands are often focal points for animal activity, including grazing animals. Wild ungulates (mule deer and Rocky Mountain elk) rely on the forage during times of the year when other forage sources are scarce. Domestic livestock will utilize these areas in the summer months for forage and relief from high temperatures. Invertebrate herbivores also utilize quaking aspen stands, but only a few result in severe damage to the overstory.

Quaking aspen communities constitute a small portion of the Planning Area, but contribute to the biodiversity of wildlife and plant species. Maser and others (1984) identified 84 wildlife species that utilize quaking aspen stands for breeding and 117 species that utilize quaking aspen communities for forage. Plant communities dominated by quaking aspen are often considered to be more productive than adjacent sagebrush or forested communities. Understory growth may vary from 560 pounds per acre to over 4,500 pounds per acre (Mueggler 1985). The vegetation occurs in multilayered mixtures of shrubs, forbs and grasses. Over 300 plant species have been identified growing in quaking aspen stands across the Great Basin. Common grass and grasslike genera found in quaking aspen stands include wheatgrass, bromes, wildrye, bluegrass, and sedges. Forb genera include Thalictrum, sweet cicely, geranium, aster, peavine, yarrow, bedstraw, and butterweed. Shrub genera typically found within quaking aspen stands are snowberry, rose, serviceberry, cherry, sagebrush, rabbitbrush, and Oregon grape. Soils located within aspen stands were formed from igneous rock and are typically deep loam Haploxerolls.

Within the Planning Area, quaking aspen is found on the Pueblo, Trout Creek, and Steens Mountains between 4,500 and 7,500 feet. Isolated stands occur as low as 4,500 feet along creek corridors and around springs on protected north slopes.

Quaking aspen communities are experiencing a general decline across the western United States (Bartos and Campbell 1998). Many factors are contributing to the decline, but two of the most common links are the lack of fire and the encroachment of conifers into the quaking aspen communities. Above 6,500 feet, quaking aspen will reproduce within the community and form a fairly dense stand. Mean fire return intervals may be fairly long at these elevations. Wet site conditions and short summer seasons reduce the likelihood of wildland fires. However, at lower elevations, quaking aspen is being actively replaced by western juniper. Three-fourths of all quaking aspen stands below 6,500 feet studied by Wall (1999) were either dominated by western juniper or had western juniper present in the community. The lack of fire has permitted western juniper to establish and become dominant or co-dominant in many quaking aspen stands; this situation is limited to Steens Mountain. The Pueblo and Trout Creek Mountains do not have western juniper, except for isolated trees. Stands below 6,600 feet on Steens Mountain are most susceptible to encroachment by western juniper (Wall et al. 2001).

3.5.2.2 Western Juniper

Western juniper woodlands are the dominant woodland type throughout much of the Planning Area. They occupy an elevational band between 4,500 and 7,000 feet. Below 4,500 feet, available soil moisture limits western juniper's growth to wet areas or stream courses. Above 7,000 feet, temperature and the short growing season limits growth.

Two categories of western juniper woodlands can be found. Woodlands with trees less than 120 ybp have developed after European settlement (hereafter identified as post-settlement woodlands) of the Great Basin. These include over 90 percent of the current western juniper woodlands across the Planning Area. These sites are altered mountain big sagebrush, low sagebrush, quaking aspen, riparian broadleaved woodland, and in some cases mountain mahogany plant communities. Encroachment of western juniper into these plant communities can be attributed to past grazing practices, fire suppression, and subtle climate shifts over the last 120 years. Understory vegetation in the post-settlement stands contains similar species to the pre-settlement plant community.

Woodlands with old to ancient trees are found on rocky ridge tops, shallow soil areas, and other areas where there is limited accumulation of ground fuels. Tree ages may exceed 1,000 years in these stands. Growth form of old trees is often characterized by a generally asymmetrical appearance, rounded spreading canopies, canopies that are often sparse, large irregular tapering trunks, deeply furrowed and fibrous bark, few but heavy branches, and the presence of a bright green arboreal fruticose lichen (Burkhardt and Tisdale 1969, Miller, R.F. and J.A. Rose 1999).

Associated understory plant species in post-settlement woodlands are similar to the species found in sagebrush, aspen and riparian plant communities prior to juniper encroachment. Over 90 percent of the current western juniper woodlands in Oregon have developed since the latter part of the 19th century. Introduction of domestic livestock, fire suppression, and subtle climatic shifts over the last 120 years have permitted western juniper to encroach into more productive mountain big and low sagebrush, quaking aspen, and riparian deciduous woodlands (Miller et al. 1999). Current GIS data indicate that between 100,000 and 200,000 acres of western juniper dominated plant communities are within the Planning Area (BLM Ecological Site Inventory [ESI] file data). Western juniper encroachment has occurred across a variety of soil types and topography. These stands also exhibit a variety of woodland development. Areas where encroachment of western juniper has been fairly recent resemble the original plant community. However, areas where woodland development is more advanced are dominated by western juniper. In these areas, western juniper has either reduced or eliminated associated woody vegetation. Herbaceous plant species are similar to the pre-encroachment plant community. On shallower soils, often found on south facing slopes, herbaceous vegetation and associated understory shrubs are also severely reduced by the developing woodlands.

Shrub species that occur in juniper woodland include big and low sagebrush, bitterbrush, rabbitbrush, currant, and snowberry. Grass species common in the juniper woodland community include bluebunch wheatgrass, Sandberg's bluegrass, Idaho fescue, western and Thurber's needlegrass, and cheatgrass. Mountain mahogany can occasionally be found at the upper elevations of this community. Among the rich array of forbs found in this community are the buckwheat and milkvetch species, balsam root, asters, phlox, pussytoes, lupine, yarrow, and phacelia species.

3.5.2.3 Grand Fir

In the Planning Area, approximately 20 acres of grand fir are present in scattered stands within the CMPA. These areas contain a mature overstory with large numbers of young trees as an understory and have marginal commercial value.

3.5.3 Wildland Juniper Management Area

Additional information is needed to address the various challenges of juniper management. Gathering this information is one component of the 3,268-acre WJMA created by the Steens Act. As stated in the Steens Act, special management practices shall be adopted for the WJMA for the purposes of experimentation, education, interpretation, and demonstration of active and passive management intended to restore the historic fire regime and native vegetation communities on Steens Mountain. The area was selected because it is representative of western juniper woodlands across the Planning Area and it has good access for demonstration areas. Information obtained from this area will be utilized in future planning decisions and project design.

Juniper woodlands in the CMPA occur between 5,700 to 6,560 feet in elevation and are dominated by juniper. Mountain big sagebrush, Idaho fescue, needlegrass, and low sagebrush occupy drier sites in this community. Mountain mahogany, bitterbrush, wax currant, and Lemmon’s needlegrass dominate the rimrock areas. Seasonally moist depressions, vernal pools, clay barrens, riparian meadows, seeps, gorge-bottom woodlands, and mesic north-facing quaking aspen dominated slopes all contribute to the habitat diversity in this community.

The restoration of historic fire regimes in the CMPA is specified in the Steens Act and discussed in the Fire Management Section (2.15). In order to reach this objective, various strategies and techniques for juniper management must be examined, including natural and prescribed burns. This is one reason why the Steens Act established the 3,267-acre WJMA and released the area from WSA status.

3.5.4 Rangelands

The Basin and Range Province in Oregon is dominated by sagebrush/native bunchgrass communities with site-specific sagebrush species. Basin big sagebrush grows mainly on sites having moderately deep loamy soils such as droughty bottomlands and fans. Wyoming big sagebrush is present almost everywhere throughout the lower elevations of the province on slightly sandy or gravelly soils. Mountain big sagebrush occurs in similar soils, but at higher elevations. Low sagebrush/bunchgrass communities are strongly dominant on shallow to very shallow stony upland lithic soils. Silver sagebrush dominates internally drained basins with seasonally saturated soils. Black sagebrush/bunchgrass communities are found on shallow soils with a calcareous layer. Perennial grassland communities do not form a major climax vegetation type, although they do dominate for a period following fire when the shrub component is eliminated. Although western juniper generally occurs as a vegetation type in many woodland communities, it has also invaded big

sagebrush/bunchgrass and low sagebrush/bunchgrass communities on mesic sites where it has not been limited by wildland fires.

3.5.4.1 Big Sagebrush Shrubland Communities

Big Sagebrush shrubland is the most common vegetative cover type in southeastern Oregon. It appears as a mosaic with shrub-steppe communities over many of the unwooded areas along mountain range foothills and on the valley floor. There are several different mixtures of plants within the big sagebrush mosaics. The mixtures include big sagebrush with perennial grasslands, annual grasslands (cheatgrass), crested wheatgrass, bitterbrush, western juniper, black greasewood, shadscale, winterfat, and rabbitbrush.

Native grasses range from a mere presence of grass to an abundance of grass, depending on history of the site and beneficial soil/water relations. Native perennial grasses include bluebunch wheatgrass, Sandberg's bluegrass, Idaho fescue, basin wildrye, junegrass, needle and thread grass, Thurber's needlegrass, bottlebrush squirreltail, mountain brome, and Indian ricegrass. Introduced grasses are primarily cheatgrass and crested wheatgrass.

The big sagebrush community in the Planning Area primarily occurs between 4,200 and 8,000 feet in elevation. Much of the Wyoming big sagebrush habitat on the west side of Steens Mountain has been planted to crested wheatgrass and occasionally fourwing saltbush. Western juniper extends into this community from above, along basaltic fractures occupied by wax currant, ocean spray, and other shrubs. Riparian woodlands dominated by willow, alder, black cottonwood, chokecherry, and dogwood interrupt the broad expanses of sagebrush scrub.

3.5.4.2 Black Sagebrush/Grassland Communities

Black sagebrush has a limited distribution in the Basin and Range Province and is considered a "rare type" in this province. This plant community is found on shallow soil plateaus and gentle slopes. The sites have extensive areas of exposed rock. Wildland fire occurrence is rare, with a mean return interval (average number of years between fire events), of approximately 100 to 200 years. Sandberg's bluegrass is usually the dominant grass, making up most of the vegetative cover; however, other bunch grasses also occur on these sites. Black sagebrush is the dominant shrub and often the only shrub present. In some areas, these black sage stands can be extensive or may occur in a mosaic with low or big sagebrush. Shadscale, squirreltail, and cheatgrass also occur on these sites.

3.5.4.3 Silver Sagebrush/Grassland Communities

The silver sagebrush/grassland community is usually found in valley bottomlands. Silver sage is the dominant and characteristic shrub of this community. This tall shrub community is moderately to widely spaced. It grows in areas that have been deflated (eroded by wind) and subsequently partially filled with ingrained sediments. Although species such as creeping wildrye occasionally occur, the understory can be dominated by widely spaced, often robust bunchgrasses such as Nevada bluegrass.

3.5.4.4 Low Sagebrush/Grassland Communities

Low sagebrush communities are found throughout eastern Oregon, generally on areas with shallow basalt soils. Low sagebrush is the dominant and often the only shrub in the stand. Western juniper is also commonly found on this site. Other associated grasses can be bluebunch wheatgrass, Idaho fescue, Thurber’s needlegrass, Nevada bluegrass, Sandberg's bluegrass, and cheatgrass. Plants such as Lomatiums, onions, and Indian carrot are economically important to American Indian tribes and are found in this plant community. The low sagebrush plant communities usually occur on soils where rooting depth is restricted by bedrock or a heavy clay layer. The restricted rooting profile lowers the site productivity. Low sagebrush occupies some large areas of land, especially on the north and west sides of Steens Mountain. In other areas, low sagebrush plant communities are found in a complex mosaic with other sagebrush plant communities such as Wyoming and mountain big sagebrush. The sites have extensive areas of exposed rock and often do not have enough vegetation to support wildland fires. Low sagebrush can also occur within an aspen mosaic. After the snow melts and soil warms in the spring, these areas are rich with colorful and diverse perennial and annual wildflowers.

3.5.4.5 Mountain Big Sagebrush/Grassland Communities

At elevations between 5,500 and 8,000 feet in the Basin and Range Province, mountain big sagebrush communities occur on plateaus and rocky flats with minimal soil development. Sandberg's bluegrass, bluebunch wheatgrass, Idaho fescue, Nevada bluegrass, cheatgrass, bitterbrush, wax currant, snowberry, and grey rabbitbrush are common in this community type. This medium to medium-tall shrubland varies from widely spaced to fairly dense shrubs occurring on deep-soiled to stony flats, ridges, and mountain slopes, and usually in cool moist areas receiving a large snowpack. In this community, Idaho fescue is the most common and diagnostic grass.

3.5.4.6 Mountain Shrubland Communities

Mountain shrubland is found on the steep rocky slopes of mountains in southeastern Oregon. It usually appears as a minor component within the juniper woodland types, or it grades in and out of sagebrush steppe. This cover type is commonly encountered but generally exists as units that are too small to be mapped. This widely dispersed tall shrubland grows in rock talus and rock outcrops, in soil pockets within rocky slopes, and in flatter areas with big sagebrush. The key shrub species in the mountain shrubland community are bitterbrush and snowberry, but others can be wax currant, ocean spray, chokecherry, and bitter cherry. Bitterbrush communities are found in medium-tall shrubland steppe with bunchgrass or cheatgrass understory. Bitterbrush can be dominant or codominant with big sagebrush. Idaho fescue is the characteristic native bunchgrass, with bluebunch wheatgrass codominant under bitterbrush at lower elevations. Western needlegrass is dominant at the higher elevations and where soils are more sandy. Snowberry communities are found on steep slopes between alpine habitats and riparian or sagebrush steppe.

3.5.4.7 Alpine Grassland Communities

The Alpine Bunchgrass community on Steens Mountain occurs at elevations greater than 8,000 feet. This community forms the bulk of the native perennial grassland vegetation type in the Planning Area. The highest vegetation zone on Steens Mountain has been referred to as either subalpine grassland or true alpine tundra. The dry, gravelly, windswept summit ridges have a characteristic xeric flora including cut-leaf daisy, sulfur-flowered buckwheat, balloonpod milkvetch, prairie smoke, Steens Mountain paintbrush, lance-leaf stonecrop, mountain butterweed, and needle-leaf sandwort. Dry bunchgrass communities below the ridge crests are dominated by Sandberg’s bluegrass, sheep fescue, and sedges. A complex assortment of alpine wet and mesic meadows occurs in cirques and pockets where snow accumulates and provides perennial water in the form of springs or a high water table. Common species in this area include American bistort, cinquefoil, monkeyflower, speedwell, buttercup, elephant’s head, sedges, rushes, tufted hairgrass, and redtop.

3.5.4.8 Modified Grassland - Crested Wheatgrass and Cheatgrass Communities

Approximately two percent of the public lands in the Planning Area have been planted with crested wheatgrass or have been invaded by cheatgrass. Both of these species originated in Eurasia and have adapted very well to these soils and climate. Cheatgrass, an annual, was inadvertently introduced into America with cattle and in hay used for ship ballast. It can out-compete the native grasses by germinating in the fall. Presently, these grasslands are used primarily for grazing. Weedy native and exotic annual forbs may also be present or even dominate on some sites. Large expanses of cheatgrass can be the result of fires, unsuccessful seedings, historic overgrazing, abandoned farming, or other disturbances. Weedy forbs such as tumble mustard, filaree, tumbleweed, burr buttercup, clasping peppergrass, and bull thistle are often common in these areas.

In the past, many acres were planted with crested wheatgrass after wildland fires. These sites may remain in a dominant crested wheatgrass community for about ten years until sagebrush and rabbitbrush recolonize the site. This vegetation type is often restricted to foothill margins and gentle terrain in close proximity to valley bottoms. The undisturbed remnants of this type (primarily on steeper slopes) are dominated by native perennials. Green and gray rabbitbrush are common, and Wyoming big sagebrush occurs locally when the seedings have aged.

3.5.4.9 Salt Desert Shrub/Grassland Communities

A large portion of the southern end of the Planning Area is dominated by salt desert shrub plant communities. These communities make up most of the types on the valley bottoms near playas and also occur on shallow soils in the foothills. The dominant shrub species in this type is black greasewood. Greasewood grows with Wyoming big sagebrush in the

deeper soils at the edge of the foothills, and with saltgrass on the extremely alkaline soils of the valley bottom. Other shrub species common to the salt desert shrub community include shadscale, bud sage, spiny hopsage, fourwing saltbush, winterfat, rabbitbrush, and horsebrush. Some of the common understory grasses in this type include saltgrass, Indian ricegrass, basin wildrye, squirreltail, and cheatgrass.

3.5.5 Noxious Weeds

Noxious weeds are present throughout the Planning Area. These weeds are introduced in the Planning Area where disturbance has occurred. The road networks provide a major vector for introduction and spread. The weed control program is dynamic, due to new weed introduction and the ongoing implementation of varied control methods. Grazing and fire management, as well as chemical, mechanical, and biological control methods, are used as part of an integrated weed management program. These methods are subject to a site-specific determination of appropriate techniques. The BLM monitors the changes in distribution and new introductions of noxious weeds on an annual basis.

In Oregon, as well as in other western states, noxious weeds are so thoroughly established and spreading so rapidly that they have been declared a menace to the public welfare (Oregon Revised Statute [ORS] 570.505). Noxious weed invasion contributes to the loss of rangeland productivity, increased soil erosion, reduced species and structural diversity, and loss of wildlife habitat. In some instances, such invasion is hazardous to human health and welfare, as emphasized in the Federal Noxious Weed Act (PL 93-629). Some weed species pose a threat to multiple use management of public land.

Noxious weeds cannot be adequately controlled unless federal, state, county, and private interests work together. The Carlson-Foley Act (PL 90-583), as well as state and county laws, make the federal government responsible for control of weeds on public land and provide direction for their control. The Burns DO of the BLM operates under the weed protocols set forth in the following documents: Vegetation Treatment on BLM Lands in Thirteen Western States FEIS and ROD (USDI 1991), Supplement to the Northwest Area Noxious Weed Control Program FEIS and ROD (USDI 1987), and the Burns District Noxious Weed Management Program EA #OR-020-98-05 (USDI 1998a).

The Oregon Department of Agriculture (ODA) has developed a classification system to provide guidelines for implementing and prioritizing noxious weed control programs, to assist in the distribution of limited funds, and to serve as a model for other weed classification systems (ODA 1997). This system defines three classes of noxious weed species: 1) weeds that pose a known economic threat and occur in infestations small enough to make eradication or containment possible; 2) weeds that pose an economic threat and whose regional abundance limits control techniques primarily to biological methods; and 3) weeds for which the ODA will implement a statewide management plan.

Harney County has listed and classified the noxious weeds currently present or that occur in close proximity to Harney County. The weeds are rated as A, B, or C pests. Weeds rated as “A” pests are of known economic importance, are known to occur in the county in small enough infestations to make eradication practicable, or are not known to occur but have “A” status in surrounding counties so that future occurrence seems imminent. Weeds rated as “B” pests are of known economic importance, are of limited distribution in the county, and are subject to intensive control or eradication where feasible at the county level. Weeds rated as “C” pests are of known economic importance and of general distribution that is subject to control, intensive control, or eradication as local conditions warrant. See Table 3.8 for the complete list of noxious weeds known to occur in the Planning Area.

3.6 Fish and Wildlife

As a public land administrator in Oregon, the BLM is responsible for managing a wide array of habitats used by native and introduced fish and wildlife species. The ODFW is responsible for managing animal populations. The BLM manages fish and wildlife and their habitats in cooperation with the ODFW. Management is directed toward maintenance, improvement, and expansion of habitat quality and quantity under multiple use considerations. Management programs designed to benefit wildlife consider both population and habitat.

3.6.1 Fish and Aquatic Habitat

Fish inhabit perennial and intermittent streams, springs, ponds, lakes, and reservoirs throughout the Planning Area. The AMU and CMPA contain approximately 430 miles and 370 miles of perennial streams, and 58,600 acres and 1,337 acres of reservoirs, ponds, and lakes, respectively.

Public land in the Planning Area provides habitat for a total of 11 native fish species, distinct subspecies or distinct populations, and several introduced fishes (Table 3.9). A high proportion of the native fish fauna is endemic to relatively localized regions, primarily due to the unique post-Pleistocene climatic and geologic history of the Great Basin. Of the 11 native fish populations, four have distributions that are restricted to the Planning Area for a major portion of their range (the Catlow Valley population of Great Basin redband trout, Borax Lake chub, Catlow Valley tui chub, Alvord chub). These four species are discussed in section 3.7.3.

Table 3.8: Noxious Weed Species in the Planning Area

Common Name	Scientific Name	County Rating	Reported in AMU	Reported in CMPA	No Reports in Planning Area
bindweed, field	*Convolvulus arvensis*	C	X	X	
black henbane	*Hyoscyamus niger*	A	X		
bull thistle	*Cirsium vulgare*	NR	X	X	
Canada thistle	*Cirsium arvense*	C	X	X	
dalmatian toadflax	*Linaria dalmatica*	B	X	X	
diffuse knapweed	*Centaurea diffusa*	A	X	X	
halogeton	*Halogeton glomeratus*	C	X		
leafy spurge	*Euphorbia esula*	A			X
Mediterranean sage	*Salvia aethiopis*	B	X	X	
medusahead	*Taeniatherum caput-medusae*	B		X	
musk thistle	*Carduus nutans*	A			X
perennial pepperweed	*Lepidium latifolium*	B	X	X	
puncturevine	*Tribulus terrestris*	B	X		
purple loosestrife	*Lythrum salicaria*	A			X
rush skeletonweed	*Chondrilla juncea*	A			X
Russian knapweed	*Acroptilon repens*	B	X	X	
Scotch thistle	*Onopordum acanthium*	B	X	X	
smallflower tamarisk	*Tamarix parviflora*	A	X	X	
scotchbroom	*Cytisus scoparius*	A			X
spotted knapweed	*Centaurea maculosa*	A	X	X	
squarrose knapweed	*Centaurea virgata*	A			X
St. John's wort	*Hypericum perforatum*	C	X	X	
tansy ragwort	*Senecio jacobaea*	A		X	
whitetop	*Cardaria spp.*	C	X	X	
yellow starthistle	*Centaurea solstitialis*	A	X	X	
yellow toadflax	*Linaria vulgaris*	A		X	

Table 3.9: Fish Species or Subspecies within the Planning Area

Common Name	Scientific Name	Status			Native
		BLM	State[1]	Federal[2]	
Lahontan cutthroat trout	*Oncorhynclus clarki henshawi*		T	T	X
Great Basin redband trout	*Oncorhynchus mykiss spp.*	Tracking		S	X
Brook trout	*Salvelinus fontinalis*				
Rainbow trout, generic	*Oncorhynchus mykiss*				
Mountain whitefish	*Prosopium williamsoni*				X
Malheur mottled sculpin	*Cottus bairdi ssp.*	Sensitive			X
Borax Lake chub	*Gila boraxobius*		E	E	X
Catlow Valley tui chub	*Gila bicolor spp.*	Tracking		S	X
Alvord chub	*Gila alvordensis*	Assessment			X
Longnose dace	*Rhinichthys cataractae*				X
Speckled dace	*Rhinichthys osculus*				X
Redside shiner	*Richardsonium balteatus*				X
Largescale sucker	*Catostomus macrocheilus*				X
Bridgelip sucker	*Catostomus columbianus*				X

[1]State Status (ODFW): E-endangered; T-threatened
[2]Federal Status (USFWS): T-threatened; S-Species of special concern with conservation agreements.

Two fish found in the Planning Area are listed as threatened or endangered by both the State of Oregon and the federal government (Lahontan cutthroat trout and Borax Lake chub). Five species or populations are considered assessment, tracking, or sensitive by the BLM. (One amphibian, the Columbia Spotted Frog, is a candidate for listing under the ESA and is discussed in the Wildlife Section of this document.)

A variety of nonnative fish species have been introduced to the Planning Area. The ODFW periodically stocks hatchery rainbow trout in Krumbo Reservoir, Fish Lake, and three small stock-water reservoirs in the Planning Area; and Lahontan cutthroat trout in Mann Lake. The Kings River has a self-sustaining population of rainbow trout established from previous stockings. Past rainbow trout stocking of the Trout Creek system has resulted in a self-sustaining population of rainbow-cutthroat hybrids. Currently, the ODFW does not stock any streams within the Planning Area. Brook trout, hatchery rainbow trout, and mixed-strain Lahontan cutthrout trout occur within the Planning Area from past stocking. Other fish introductions include crappie, which have become established in Rock Creek Reservoir. Several other transplants (guppies and other aquarium fish, several types of sunfish) are commonly found in Great Basin aquatic systems, the result of unauthorized introductions by private individuals (Sigler and Sigler 1987). These species may be present in the Planning Area.

The Planning Area contains other native nongame species such as mountain whitefish and speckled dace, with a full complement of Malheur Lake fish species occurring in the Donner und Blitzen River and McCoy Creek.

The condition of fish populations is highly dependent on the quantity and quality of available habitat.

The condition of aquatic habitat, in turn, is a reflection of physical and biological processes operating throughout the watershed. Streams, for example, transport water and sediment through a watershed. Changes in rates of erosion in upland areas can therefore affect stream ecosystems (e.g., increases in fine sediment supply to the stream negatively affect salmonid spawning and the production of aquatic macroinvertebrates, an important food source for all fish). The integrity of uplands in the watershed therefore may have consequences for the health of aquatic ecosystems.

Fish habitat is also dependent on the integrity of the stream channel, floodplain, and adjacent riparian vegetation. Riparian vegetation moderates water temperature, adds structure to the banks to reduce erosion, and provides overhead cover for fish. Intact vegetated floodplains dissipate stream energy, store water for later release, and provide rearing areas for juvenile fish. Well-established riparian woodlands also supply woody debris to the stream channel, an important component in developing habitat complexity in stream channels.

Since riparian vegetation and fish habitat are ecologically interconnected, the condition of riparian habitat is an indicator of the condition of fish habitat. Riparian Condition and Trend surveys conducted in the Planning Area during the 1970s and 1980s on 286.5 miles of riparian habitat indicated that 38 percent were considered "Good" to "Excellent" condition and 62 percent as "Fair" to "Poor" condition (Table 3.10). These surveys further indicated that 54 percent of the riparian habitat rated as "Fair" and "Poor" were in an improving trend. Subsequent observations and monitoring suggest further improvement in riparian condition of many stream reaches in the Planning Area.

Table 3.10: Riparian Condition Ratings during the 1970s and 1980s for Streams in the AMU and CMPA

	AMU		CMPA	
Condition Rating	**Miles**	**Percent**	**Miles**	**Percent**
Excellent	35.1	22	6.4	5
Good	41.1	26	26.3	21
Fair	63.4	39	55.6	44
Poor	21.6	13	37	30
Total	76.2	100	125.3	100

Water quality is another indicator of the condition of fish habitat. Several streams in the Planning Area in the Donner und Blitzen, Guano, and Alvord Lake Subbasins have been listed as water-quality limited for exceeding the temperature standard. Most of these streams contain special status fish species. Special status fish species are discussed in detail in Section 3.7.3.

Fisheries management in the AMU is ongoing to restore, maintain, or improve habitat to provide for diverse and self-sustaining communities of fishes and other aquatic organisms. Consistent with these management objectives, the Steens Act designated the RTR. These areas are discussed in section 3.7 (Special Status Species) and in section 3.24 (Wild and Scenic Rivers).

The area also provides habitat for the Columbia spotted frog, a Federal Candidate species, and the Pacific chorus frog.

3.6.2 Wildlife and Wildlife Habitat

The Planning Area provides diverse habitat including sagebrush steppe, riparian and wetlands, and juniper woodlands. Wildlife species utilizing the habitat include upland game bird species, Rocky Mountain elk, mule deer, pronghorn antelope, California bighorn sheep, cougars, raptors, waterfowl, shorebirds, wading birds, neotropical migratory birds, reptiles, amphibians, and invertebrates. A list of some of the wildlife species known to inhabit the Planning Area is included in Appendix L. The following section describes the major wildlife habitat and species found in the Planning Area.

3.6.2.1 Wildlife Habitat

The sagebrush steppe includes several upland vegetation communities with a shrubland character and a variable understory of grasses and forbs. The presence of a shrub overstory is associated with wildlife community diversity. Shrubby plants are important to most small and large wildlife because they supply food as well as hiding cover and structure. Within the sagebrush steppe community, grasses and forbs provide food and cover for wildlife. Habitats that provide a mix of grasses and forbs meet the needs of a wide range of species.

Riparian areas consist of plant communities associated with streams and rivers. The structure, food, and water available in these areas make them the single most diverse and productive wildlife habitat. Well-developed riparian areas with trees, shrubs, grasses, forbs, sedges, and rushes provide valuable habitat for a wide array of wildlife species. Wetlands consisting of either permanently or seasonally wet areas, are associated with various landscape settings including reservoirs, sloughs, playas, meadows, springs, and seeps. Wetlands typically provide succulent green forage, insects, and drinking water for wildlife. Riparian and wetland areas that do not support diverse plant communities still provide important sources of water and food for wildlife.

The juniper woodlands provide habitat for a large number of species supported within the Planning Area. These woodlands vary greatly in their habitat value depending on factors such as height, density, and age of trees. Older trees may provide cavities for nesting birds while deer and elk use juniper for thermal and escape cover. The distribution of juniper (normally between 5,700 to 6,560 feet elevation) influences the condition and quality of neighboring wildlife habitat.

Forested habitat in the Planning Area is limited to 90 acres of a relic grand fir grove of which 20 acres occupy public land. This area contains a mature overstory with a large number of young trees in the understory with marginal commercial value.

3.6.2.2 Mule Deer

Mule deer are widespread throughout the Planning Area. They are typically associated with complex mid- to upper-elevation plant communities supporting a wide variety of sagebrush, mountain shrubs, aspen, juniper, and herbaceous vegetation. Mule deer browse on shrubs and forbs, which provide most of their annual diet.

Thermal cover is critical on winter range to provide protection from wind and other adverse elements. Grassy slopes, meadows, brush fields, and other early successional stages (artificially created and otherwise) provide the majority of deer forage. During hot summer weather, aspen stands and juniper/big sage/antelope bitterbrush shrublands function as thermal cover, reducing heat stress on the animals.

Transition range can be divided into spring and fall. The vegetation of the spring transition range is similar to winter range and consists of sagebrush and juniper woodland. Grasses and forbs are important components of the spring transitional ranges. The fall transitional ranges are vegetatively similar to summer ranges and consist primarily of aspen, shrub steppe, and juniper woodland communities. Maintaining migratory routes is critical to the seasonal deer movements.

The winter range, which encompasses 537,929 acres in the Planning Area, is concentrated along the east margin of Steens Mountain adjacent to the Alvord Desert, along the western lower elevations of Steens Mountain down to the east margin of Catlow Valley, along Pickett Rim, Malheur Wildlife Refuge, and in the lower elevations of the Pueblo Mountains and Trout Creek Mountains. The winter range occurs primarily in juniper woodland and sagebrush communities with interspersed grasses. Shrubs are a major component of the winter diet, primarily antelope bitterbrush, big sagebrush, curl-leaf mountain mahogany, and western juniper. When snow conditions make higher elevations unsuitable, deer will move to suitable habitat in lower elevations. Deer tend to remain at the highest possible elevations until forced to winter concentration areas by snowfall.

3.6.2.3 Pronghorn Antelope

Pronghorn antelope are distributed throughout the Planning Area. Winter range for pronghorn antelope is concentrated in Catlow Valley, Hawks Valley, the southeast end of the Pueblo Mountains, the Fields area, along the eastern base of Steens Mountain, Krumbo Reservoir, and north of Frenchglen. During the summer, pronghorn antelope are widely distributed throughout the Planning Area in habitats having low structure and a mixture of grasses, forbs, and shrubs. Sagebrush is used for both cover and forage. Seedings and wildland fires have converted some previously dense stands of sagebrush into suitable range.

BLM livestock water developments, particularly pipelines, have allowed pronghorn antelope to expand into formerly unoccupied areas. Forage competition with cattle and wild horses is slight due to forage preferences (Vavra and Sneva 1978). Lack of water at natural or developed sites can be a serious problem during periods of drought. BLM fence

construction specifications allow pronghorn to move freely by having smooth bottom wires spaced at least 16 inches above ground level.

When coyote numbers are high, coyote predation of pronghorn kids appears to be a primary factor limiting populations. Pronghorn populations within the Planning Area are currently above the ten-year average due to declines in the coyote population and favorable habitat conditions.

3.6.2.4 Raptors

Raptors, which include predatory birds such as hawks, eagles, and falcons, can be found throughout much of the Planning Area. Local areas provide exceptionally high-quality raptor habitat and support high-density breeding populations. Common breeding species include the red-tailed hawk, Swainson's hawk, prairie falcon, American kestrel, golden eagle, northern harrier, sharp-shinned hawk, Cooper's hawk, and long-eared owl. Other less common breeders that may be found locally include the ferruginous hawk, burrowing owl, and northern goshawk. Important nesting habitats are in juniper and quaking aspen vegetation types. Volcanic ledges and buttes are often excellent nesting sites for many species. Prey species are more likely to be available for a wide range of raptors when plant communities are structurally diverse and support mixtures of grasses, forbs, and shrubs.

Many breeding species also winter within the Planning Area. Species that only winter in the area include the rough-legged hawk and northern bald eagle. Rangeland treatments and power line locations and configurations are examples of actions that potentially threaten raptor reproduction and survival. Local utility companies have cooperated in the past to design power facilities which have greatly reduced the number of raptor electrocutions.

3.6.2.5 Neotropical Migratory Birds

The Planning Area supports a wide variety of neotropical migratory bird species (more than 110 species) that breed in the United States and winter in Central or South America. Populations of some of these species are declining as a consequence of land use practices and other factors. Neotropical migratory birds exhibit variable habitat requirements and are found in several habitat types. Some of the birds in this category include song sparrow, chipping sparrow, Brewer's sparrow, downy woodpecker, hairy woodpecker, yellow-rumped warbler, yellow warbler, dusky flycatcher, Bullock's oriole, American robin, mourning dove, Cassin's finch, rufous hummingbird, Western tanager, pine siskin, violet-green swallow, and lesser goldfinch.

3.6.2.6 Waterfowl and Shorebirds

As many as 70 species of waterfowl, shorebirds, and wading birds may use the area due to the nearby wetland habitat of the Malheur NWR and private lands. Representative species include Canada goose, cinnamon teal, mallard, gadwall, American avocet, white-faced ibis, Wilson's phalarope, greater sandhill crane, great blue heron, and spotted sandpiper. These species exhibit variable habitat requirements and are found in several habitat types.

3.6.2.7 Rocky Mountain Elk

Rocky Mountain elk is one of Oregon's primary big game species found in the Planning Area. Since elk are also valued by the public for wildlife viewing, interest is high relative to the population levels and habitat conditions. The elk population remains near ODFW population objectives. Approximately 400 adult elk summer at mid to upper elevations on Steens Mountain and winter at mid to lower elevations.

Three types of cover are important to elk: hiding cover, thermal cover, and optimal thermal cover. Hiding cover includes any vegetation capable of hiding 90 percent of a standing elk at 200 feet or less. Thermal cover and optimal thermal cover exist in juniper woodlands and juniper/big sage areas.

Winter range is an important consideration in managing elk populations. The winter range in the Planning Area covers approximately 84,871 acres. During winter, elk use south-facing slopes and lower elevations because of warmer temperatures, reduced snow depths, and available forage. During periods of hot summer weather, north-facing slopes, high elevation western juniper/shrub sites, and aspen stands provide important thermal cover.

3.6.2.8 Animal Damage Control

Animal damage control is an activity of the USDA-Agricultural Plant and Animal Health Inspection Service (APHIS). This activity is authorized by federal law under the Animal Damage Control Act (7 USC 426-426b) and by Oregon State Law under ORS 610.105, authority to Control Noxious Rodents or Predatory Animals.

The roles and responsibilities of the BLM and USDA-APHIS are specified under an MOU between the BLM and USDA-APHIS, which was signed on March 21, 1995. According to this memorandum, USDA-APHIS is responsible for environmental analysis documents associated with their control actions on public land. The BLM identifies human safety areas or other resource management concerns where actions are proposed; therefore, this program will not be analyzed further. Areas of animal damage control activity are identified to the BLM on an annual basis.

3.7 Special Status Species

Special status species are plant or animal species known or suspected to be limited in distribution, rare or uncommon within a specific area, and/or vulnerable from activities which may affect their survival.

3.7.1 Plants

Table 3.11 lists 73 special status plant species found in the Planning Area. These species receive priority attention for inventory, research, and monitoring efforts. Federal, state, and nongovernmental agencies have been consulted to assure their protection and management. Special status plant surveys are made prior to land exchanges, range and wildlife projects, proposed mining operations, and other surface disturbing activities.

Nearly all of the plants on the list are rare in Oregon, but common or stable in areas outside of Oregon. There are no known threatened or endangered plant species in the Planning Area. Special status plant species occur in a variety of plant associations and on a variety of physical habitats, many of which have distinctive soil types. Several special status species often occur together. When a new location for a special status plant species is observed, the information is documented and reported to the Oregon Natural Heritage Database Program (ONHP), where it is permanently recorded.

3.7.2 Animals

Special status animal species occur on public lands, within the Planning Area. Special status designations are assigned for many reasons including limited distribution, habitat loss resulting from environmental impacts, suspected or documented population declines, or some combination of these factors. These are priority species for various surveys to determine their distributions, abundance, and habitat preferences. Table 3.12 contains a list of special status animal species found in the Planning Area.

3.7.2.1 Northern Bald Eagle

The bald eagle was listed in 1978 as a federal threatened species in Oregon under the Federal ESA of 1973. The Planning Area supports a wintering population of northern bald eagles, but no breeding pairs. The Planning Area supports approximately ten wintering eagles, primarily in areas associated with major river systems and large reservoirs.

Some systematic winter inventories have been conducted in the Planning Area's one known winter roost site. Whether this site is used consistently or sporadically due to weather conditions and available prey is unknown. Bald eagles in the Planning Area are primarily associated with public land near the Malheur NWR.

3.7.2.2 American Peregrine Falcon

The American peregrine falcon was federally listed as an endangered species throughout its range under the Federal ESA of 1973, and as a state endangered species under the Oregon ESA (ORS 1987). The peregrine falcon was delisted in 1999 after reaching the recovery goals set forth in the 1982 Pacific Coast Recovery Plan for the American peregrine falcon.

The peregrine falcon is a cliff-nesting species. Nest sites are usually associated with cliffs near water with an abundant population of nongame birds, shorebirds, and waterfowl, the peregrine's primary prey. American peregrine falcons are occasionally seen along the Catlow Rim during fall or spring migration, but no recent nesting activity has been documented. A USFWS recovery plan for the peregrine falcon requires the BLM to take action to conserve this species.

Table 3.11: Special Status Species Plants in the Planning Area

Common Name	Scientific Name	BLM Status	ONHP Status	CMPA	AMU
Alvord milkvetch	*Astragalus alvordensis*	T	L3		X
alpine fescue	*Festuca brachyphylla*	T	L3	X	
awned sedge	*Carex atherodes*	T	L3		X
Back's sedge	*Carex backii*	A	L2	X	
Bellard's kobresia	*Kobresia bellardii*	T	L3	X	
Biddle's lupine	*Lupinus biddlei*	S	L3	X	X
Bigelow's four-o'clock	*Mirabilis bigelovii var retrorsa*	T	L3		X
capitate sedge	*Carex capitata*	T	L3	X	
Cusick's hyssop	*Agastache cusickii*	A	L2	X	X
Cusicks's draba	*Draba sphaeroides var cusickii*	T	L3	X	
dark alpine sedge	*Carex subnigricans*	T	L3	X	
Davidson's penstemon	*Penstemon davidsonii var. praeteritus*	T	L3	X	X
Davis' peppergrass	*Lepidium davisii*	S	L1		X
desert needlegrass	*Achnatherum speciosum*	A	L2	X	X
desert chaenactis	*Chaenactis xantiana*	A	L2		X
discoid goldenweed	*Ericameria discoidea var discoidea*	T	L3	X	
Drummond willow	*Salix drummondiana*	T	L3	X	
dwarf evening primrose	*Camissonia pygmaea*	S	L1	X	
ephemeral monkey flower	*Mimulus evanescens*	S	L1	X	
flowering quillwort	*Lilaea scilloides*	T	L3		X
foetid sedge	*Carex foetida var. vernacular*	T	L3	X	
fourwing milkvetch	*Astragalus tetrapterus*	T	L3		X
gray moonwort	*Botrychium minganense*	A	L2	X	
hairstemmed rush	*Juncus capillaris*	T	L3	X	
hairy wild cabbage	*Caulanthus pilosus*	T	L3		X
Hayden's cymopterus	*Cymopterus nivalis*	A	L2	X	
Hayden's sedge	*Carex haydeniana*	T	L3	X	
hedgehog cactus	*Pediocactus simpsonii var. robustior*	T	L3	X	X
iodine bush	*Allenrolfea occidentalis*	A	L2		X
Janish's penstemon	*Penstemon janishiae*	T	L3	X	
Kruckeberg's holly fern	*Polystichum kruckebergii*	T	L3	X	
lance-leaved grapefern	*Botrychium lanceolatum*	A	L2	X	
large-flowered chaenactis	*Chaenactis macrantha*	A	L2		X

Common Name	Scientific Name	BLM Status	ONHP Status	CMPA	AMU
least rush	*Juncus hemiendytus var. abjectus*	T	L3	X	
long-flowered snowberry	*Symphoricarpos longiflorus*	A	L2	X	X
lyrate malacothirx	*Malacothrix sonchoides*	T	L3		X
Malheur cryptantha	*Cryptantha propria*	T	L3		X
moonwort	*Botrychium lunaria*	A	L2	X	
montane pepperwort	*Lepidium montanum var. nevadense*	T	L3		X
moss gentian	*Gentiana prostrata*	A	L2	X	
mosslike dwarf rush	*Juncus bryoides*	T	L3	X	
naked-stemmed phacelia	*Phacelia gymnoclada*	A	L2		X
narrowleaf cottonwood	*Populus angustifolia*	T	L3	X	X
new sedge	*Carex nova*	T	L3	X	
nodding melic	*Melica stricta*	T	L3	X	X
ochre-headed buckwheat	*Eriogonum ochrocephalum ssp. calcareum*	T	L3		X
pale paintbrush	*Castilleja pallescens var. inverta*	T	L3		X
pinnate grapefern	*Botrychium pinnatum*	A	L2	X	
prickly poppy	*Argemone munita spp. rotundata*	A	L2	X	X
purple cymopterus	*Cymopterus purpurascens*	A	L2		X
Rafinesque's pondweed	*Potamogeton diversifolius*	A	L2	X	X
Raven's lomatium	*Lomatium ravenii*	A	L2		X
Rocky Mtn. Helianthella	*Helianthella uniflora var. uniflora*	T	L3	X	
salt heliotrope	*Heliotropium curassavicum*	T	L3		X
short-fruited willow	*Salix brachycarpa var brachycarpa*	T	L3	X	
short-lobed penstemon	*Penstemon seorsus*	T	L3	X	X
Siberian water-milfoil	*Myriophyllum sibiricum*	T	L3	X	X
Sierra willow	*Salix orestera*	T	L3	X	
Sierran springbeauty	*Claytonia nevadensis*	T	L3	X	
sky pilot	*Polemonium viscosum*	T	L3	X	
slender gentian	*Gentianella tenella*	A	L2	X	
slender wild cabbage	*Caulanthus major var. nevadensis*	S	L1		X
Steens Mountain paint brush	*Castilleja pilosa var. steenensis*	S	L3	X	
teacher's sedge	*Carex praeceptorum*	T	L3	X	X
thick-stemmed wild cabbage	*Caulanthus crassicaulis*	T	L3		X
Tiehm's rush	*Juncus tiehmii*	T	L3	X	
Torrey's malacothrix	*Malacothrix torreyi*	T	L3		X
two-stemmed onion	*Allium bisceptrum*	T	L3		X
umbellate springbeauty	*Claytonia umbellata*	T	L3	X	
verrucose seapurslane	*Sesuvium verrucosum*	A	L2		X
weak-stemmed stonecrop	*Sedum debile*	T	L3	X	

Common Name	Scientific Name	BLM Status	ONHP Status	CMPA	AMU
wedge-leaf saxifrage	*Saxifraga adscendens var.oregonensis*	A	L2	X	
white-flowered penstemon	*Penstemon pratensis*	T	L3	X	X

BLM Status

S=Sensitive - species that could easily become endangered or extinct in a state, are restricted in range, and have natural or human-caused threats to survival.

A=Assessment - species not presently eligible for official federal or state status but are still of concern and need protection or mitigation in BLM activities.

T=Tracking - species that may become of concern in the future, but more information is needed to determine status for management purposes.

ONHP Status

L1 - taxa threatened with extinction or presumed to be extinct throughout their range.

L2 - taxa threatened with extirpation or presumed to be extirpated from the State of Oregon.

L3 - taxa of conservation concern that need more information to determine status.

Table 3.12: Special Status Animal Species in Southeastern Oregon

Common Name	Scientific Name	Status				Location (CMPA or AMU)
		Fed	BLM	OR	ONHP	
Amphibian						
Columbia spotted frog	*Rana luteiventris*	FC			L2	CMPA
western toad	*Bufo boreas*		BT		L3	CMPA
Bird						
American white pelican	*Pelecanus erythrorhynchos*		BA		L2	Both
bank swallow	*Riparia riparia*		BT		L4	Both
black rosy finch	*Leucosticte atrata*		BT		L4	CMPA
black tern	*Chlidonias niger*	SoC	BT		L4	CMPA
black-throated sparrow	*Amphispiza bilineata*		BT		L2	Both
bobolink	*Dolichonyx oryzivorus*		BT		L4	CMPA
broad-tailed hummingbird	*Selasphorus platycercus*		BT		L4	Both
Columbia sharp-tailed grouse	*Tympanuchus phasianellus columbianus*	SoC	BS		L1	Both[#]
ferruginous hawk	*Buteo regalis*	SoC	BS		L2	Both
flammulated owl	*Otus flammeolus*		BS		L4	CMPA
Forster's tern	*Sterna forsteri*		BT		L3	Both
Franklin's gull	*Larus pipixcan*		BA		L2	Both
great egret	*Casmerodius albus*		BT		L3	Both
Greater sage-grouse	*Centrocercus urophasianus*	SoC	BS		L2	Both
greater sandhill crane	*Grus canadensis ssp.*		BT		L4	Both
horned grebe	*Podiceps auritus*		BT		L4	CMPA
least bittern	*Ixobrychus exilis*	SoC	BA		L2	CMPA

Common Name	Scientific Name	Status				Location (CMPA or AMU)
		Fed	BLM	OR	ONHP	
loggerhead shrike	*Lanius ludovicianus*		BT		L4	Both
mountain quail	*Oreortyx pictus*	SoC	BT		L4	Both
northern bald eagle	*Haliaeetus leucocephalus*	FT		ST	L1	Both
northern goshawk	*Accipiter gentilis*	SoC	BS		L3	CMPA
olive-sided flycatcher	*Contopus cooperi*		BT		L3	Both
peregrine falcon	*Falco peregrinus ssp.*		BS	SE	L1	CMPA
pinyon jay	*Gymnorhinus cyancephalus*		BT		L4	Both
sage sparrow	*Amphispiza belli*		BS		L4	Both
snowy egret	*Egretta thula*		BA		L4	Both
Swainson's hawk	*Buteo swainsoni*		BT		L4	Both
western burrowing owl	*Athene cunicularia*	SoC	BS		L2	CMPA
western snowy plover (inland)	*Charadrius alexandrinus*			ST	L2	AMU
white-faced ibis	*Plegadis chihi*	SoC	BT		L4	Both
willow flycatcher	*Empidonax traillii adastus*	SoC	BT		L4	Both
yellow-billed cuckoo	*Coccyzus americanus*	FC	BS		L2	CMPA
Fish						
Alvord chub	*Gila alvordensis*	SoC	BA		L2	Both
Borax Lake chub	*Gila boraxobius*	FE		SE	L1	AMU
Catlow Valley tui chub	*Gila bicolor ssp.*	SoC	BT		L3	Both
Great Basin redband trout	*Oncorhynchus mykiss ssp.*	SoC	BT		L3	Both
Lahontan cutthroat trout	*Oncorhynchus clark henshawi*	FT		ST	L1	Both
Malheur mottled sculpin	*Cottus bairdi ssp.*	SoC	BS		L3	Both
Mammal						
California bighorn sheep	*Ovis canadensis ssp.*	SoC	BT		L4	Both
California wolverine	*Gulo gulo*	SoC		ST	L2	CMPA
Canada lynx	*Lynx canadensis*	FT			L2	CMPA*
fringed myotis	*Myotis thysanodes*	SoC	BT		L3	Both
gray wolf	*Canis lupus*	FE		SE	L2-ex	Extirpated
kit fox	*Vulpes velox*			ST	L2	AMU
long-eared myotis	*Myotis evotis*	SoC	BT		L4	Both
long-legged myotis	*Myotis volans*	SoC	BT		L3	Both
pallid bat	*Antrozous pallidus*	SoC	BT		L3	Both
Preble's shrew	*Sorex preblei*	SoC	BT		L3	Both
pygmy rabbit	*Brachylagus idahoensis*	SoC	BA		L2	AMU

Common Name	Scientific Name	Status				Location (CMPA or AMU)
		Fed	BLM	OR	ONHP	
silver-haired bat	*Lasionycteris noctivagans*	SoC	BT		L3	Both
spotted bat	*Euderma maculatum*	SoC	BA		L2	Both
Townsend's big-eared bat	*Corynorhinus townsendii*	SoC	BS		L2	Both
western small-footed myotis	*Myotis ciliolabrum*	SoC	BT		L3	Both
white-tailed antelope ground squirrel	*Ammospermophilus leucurus*		BT		L3	Both
white-tailed jackrabbit	*Lepus townsendii*		BT		L3	Both
Yuma myotis	*Myotis yumanensis*	SoC	BT		L4	Both
Reptile						
desert horned lizard	*Phrynosoma platyrhinos*		BT		L3	Both
long-nosed leopard lizard	*Gambelia wislizenii*		BT		L4	Both
Mojave black-collared lizard	*Crotophytus bicinctores*		BT		L3	Both
northern sagebrush lizard	*Sceloporus graciosus*	SoC	BT		L4	Both

Status:

FE=Federal Endangered: A species which is in danger of becoming extinct within the forseeable future throughout all or a significant portion of its range.

FT=Federal Threatened: A species that is likely to become endangered within the forseeable future.

FC=Federal Candidate: A species for which the USFWS or National Marine Fisheries Service have sufficient information to support a proposal for listing as Threatened or Endangered under the ESA.

SoC=Species of Concern: A former C2 candidate species which needs additional information in order to propose as threatened or endangered under the ESA. The USFWS is reviewing species information for consideration as Candidates for listing under the ESA.

SE=State Endangered: A species which is in danger of becoming extinct within the foreseeable future throughout all or a significant portion of its range. This species may be extirpated from its range within the state.

ST=State Threatened: An animal that could become endangered within the foreseeable future within all or a portion of its range.

BS=Bureau Sensitive: Species that could easily become endangered or extinct in a state, are restricted in range, and have natural or human-caused threats to survival.

BA=Bureau Assessment: Species not presently eligible for official federal or state status but are still of concern and need protection of mitigation win BLM activities.

BT=Bureau Tracking: Species that may become of concern in the future, but more information is needed to determine status for management purposes.

ONHP (Oregon Natural Heritage Program):

L1=List 1: Taxa that are threatened with extinction or presumed to be extinct throughout their entire range.

L2=List 2: Taxa that are threatened with extirpation or presumed to be extirpated from the state of Oregon.

L3=List 3: Species for which more information is needed before status can be determined, but which may be threatened or endangered in Oregon or throughout their range.

L4=List 4: Taxa which are of concern, but are not currently threatened or endangered.

- No longer found in the Planning Area.

* - Trapped once in the Steens Mountain, which is outside its normal range of habitat.

Extirpated - no longer within the original range of the species in Oregon. Outside of the recovery zone for gray wolves.

3.7.2.3 Northern Kit Fox

The northern kit fox is a state threatened species that is present within some of the salt desert shrub habitat of the Planning Area and has a range of approximately 254,691 acres. According to ODFW data, kit fox populations are currently low but are higher than when the species was added to the state list of threatened species. Kit fox populations in Oregon are thought to be naturally limited by the amount of salt desert habitat available. The kit fox is common in Nevada and some other western states. USDA-APHIS animal damage control actions avoid kit fox occupancy areas.

3.7.2.4 Columbia Spotted Frog

Columbia spotted frogs inhabit ponds, lake edges, slow moving streams, or perennial warm marsh habitats with few or no cold springs. They are known to occur on the Donner und Blitzen River and some of its tributaries, on McCoy Creek, in Fish Lake, and in Lily Lake. Spotted frogs are also often associated with non-woody wetland plant communities and use algal mats for resting. Egg masses are usually piled on the stream bottom in very shallow water in late spring, sometimes by several females in the same location in successive years. Egg masses often rise above the surface of the water. Froglets and adults occur in well-vegetated ponds, marshes, and slow streams, but have been found in disturbed habitats with reduced vegetation.

Spotted frogs become active as early as February. Males are not territorial and call during the day using a series of six to nine low clucking sounds. Egg laying has been documented as early as March in southwestern British Columbia and as late as June 30 in higher elevations. In mountain and interior sites, spotted frogs have been known to overwinter as larvae, metamorphosing the following spring (Nussbaum et al. 1983). This phenomenon has not been documented in the Planning Area. When disturbed, spotted frogs will move to deeper water on the stream bottom and conceal themselves in dense vegetation or bottom debris.

3.7.2.5 Greater Sage-Grouse

The western subspecies of the Greater sage-grouse was federally listed as a Category 2 candidate species by the USFWS until the classification was dropped from the list. The Greater sage-grouse is currently a BLM sensitive species.

Sage-grouse populations have exhibited long-term declines throughout North America, declining by 33 percent over the past 30 to 40 years. The species has disappeared in five states (Arizona, New Mexico, Oklahoma, Kansas, Nebraska) and one province (British Columbia). It is "at risk" in six other states (Washington, California, Utah, Colorado, North Dakota, South Dakota) and two provinces (Alberta, Saskatchewan). Even in states where the species is considered to be “secure" (Oregon, Nevada, Idaho, Wyoming, Montana), long-term population declines have averaged 30 percent (Connelly and Braun 1997; Crawford and Lutz 1985). The ODFW has indicated that the population is stable in Oregon (Willis 1993).

The Oregon BLM is committed to the implementation of the “Greater Sage-Grouse and Sagebrush-Steppe Ecosystem Guidelines” (2000). While these guidelines focus on the Greater sage-grouse as an icon, they are dedicated to all of the shrub-steppe obligate species that have been the focus of the ICBEMP effort. The guidelines incorporated information from the “Guidelines to Manage Sage Grouse Populations and Their Habitats” (Connelly et al. 2000).

Sage-grouse depend on sagebrush-grassland communities. Big sage, the primary species upon which sage-grouse depend in Harney County, is usually associated with western juniper, although juniper is not a necessary habitat component. Sage-grouse are most frequently found in sage covered flatlands or gently rolling hills. Free water is also a component of sage-grouse habitat, but it is not required for daily survival. Water is used when available from late spring through late fall. Sage-grouse attain their highest population densities in areas that contain abundant and well distributed surface water and rely on snow and ice during the winter months and moisture from succulent plants when available.

Migratory sage-grouse populations may travel great distances seasonally. Summer and winter ranges may be as far as 50 miles apart, or more. If deep snow covers spring and summer ranges, the birds may migrate to lower elevations to find food and cover. Sage-grouse may nest and raise their broods in sage covered mountain valleys at high elevations. A variety of sage stand conditions are necessary for good sage-grouse habitat. In general, good habitat should contain openings less than 300 yards in circumference, some dense stands, and approximately equal amounts of tall and short sagebrush plants. Sage-grouse use three habitat types throughout the year: breeding habitat, brood-rearing habitat, and wintering habitat.

Lek sites, or sage-grouse strutting and mating grounds, are usually small open areas from less than an acre to ten acres in size, with low, sparse sagebrush or areas devoid of vegetation. Grassy swales, natural and irrigated meadows where grass has been removed, burned areas, cultivated fields adjacent to sagebrush-grass rangelands, and dry lakebeds are often used as leks.

Optimum sage-grouse nesting habitat consists of sagebrush stands containing plants 16 to 32 inches high with a canopy cover ranging from 15 percent to 25 percent, and an herbaceous understory of at least 15 percent cover that is at minimum seven inches tall. These conditions should be found on 80 percent of the breeding habitat for any given population of sage-grouse (Klebenow 1969; Wallestad and Pyrah 1974).

Early brood rearing generally occurs relatively close to nest sites, but movements of individual broods may be highly variable (Connelly 1982; Gates 1983). Sage-grouse chick diets include forbs and invertebrates. Insects, especially ants and beetles, are an important component of early brood rearing habitat. Brood habitats containing a variety of plant species tend to provide an equivalent diversity of insects, which are important chick foods. As sagebrush habitats dry up and herbaceous plants mature, hens move their broods to moister sites during June and July where more succulent vegetation is available (Klebenow 1969; Gill 1965; Connelly et al. 1988). Optimum brood-rearing habitat consists of sagebrush stands that are 16 to 32 inches tall with a canopy cover of ten to 25 percent and an herbaceous understory of 20 percent (ten percent grasses and ten percent forbs). This type of habitat should be found on at least 40 percent of an area that is considered brood habitat.

As fall progresses toward winter, sage-grouse start to move toward their winter ranges. At such times, their diet shifts primarily to sagebrush leaves and buds (Connelly et al. 1988). Timing of movement depends on weather severity and snow depth. Sage-grouse winter habitats are relatively similar throughout most of the species range. Since the sage-grouse winter diet consists almost exclusively of sagebrush, winter habitats must provide sagebrush that is exposed at least ten to 12 inches above snow level (Hupp and Braun 1989). Such conditions provide both food and cover for wintering sage-grouse, which tend to prefer areas of high canopy cover as well as taller Wyoming big sagebrush. They will select the plants with the highest protein content. In situations where snow covers the sagebrush, the birds will move to areas where it is exposed. Sagebrush of varying heights should be found on 80 percent of the wintering range of a given population to guarantee that enough forage will be available.

The greatest negative impact on sage-grouse is the destruction or adverse modification of their habitat. Presently, sage-grouse in reduced numbers occupy most of their historic range in the Planning Area but have disappeared from areas on the periphery of former ranges where large areas of sagebrush have been removed. During the past 40 years, many sagebrush covered valleys and foothill ranges have been sprayed, plowed, chained, burned, disked, or cut in an attempt to convert these ranges to grasslands.

3.7.2.6 California Bighorn Sheep

California bighorn sheep were eliminated from Oregon by 1915. Current populations are the result of numerous ODFW-directed reintroductions and supplemental releases during the past two decades. Bighorns from Steens Mountain have been captured and used for relocations within Oregon and in other western states. Although populations within the analysis area have recently increased, the current distribution in Oregon still represents a small percentage of the former historic bighorn range (Oregon's Bighorn Sheep Management Plan 1992-1997).

Approximately 775 bighorns reside within the Planning Area in seven primary locations including the CMPA. Small herds occupy other regions of the Planning Area. Bighorn range covers 436,715 acres in the Planning Area and 101,168 acres in the CMPA. Summering bighorns from the Alvord Peak area and Pueblo Mountains usually winter in the low mountains east of Fields. This is the only major migratory bighorn movement known in eastern Oregon.

Disease transmission between domestic sheep and bighorns can cause rapid and massive bighorn losses, which results in public controversy. No licensed sheep grazing permits overlap with currently occupied bighorn range, nor has the ODFW indicated any problems with disease transmission between cattle and bighorn sheep. However, domestic sheep grazing does occur on predominantly private land south of Fish Lake on Steens Mountain which is approximately four miles from occupied bighorn sheep habitat. This close proximity poses some additional risk that disease transmission could happen in the future. Due to this potential, transplants of bighorn sheep into sites identified in Oregon's Bighorn Sheep Management Plan in Little Blitzen, Big Indian and Lower Blitzen canyons have been postponed by the ODFW.

In accordance with an approved state management plan, the ODFW wishes to continue releasing bighorns into suitable unoccupied habitat and to conduct supplemental releases into currently occupied habitat. Should bighorn populations exceed management objectives in the future, the ODFW would like to continue removing bighorns by capture for release into other suitable habitat in Oregon and elsewhere.

3.7.3 Fish

The following section is a description of sensitive fish species found in the Planning Area. It includes a discussion of distribution and current status, important habitat relationships, and key factors influencing status. Much of the following discussion is excerpted from the Draft SEORMP (USDI 1998b) and the ICBEMP Scientific Assessment (USDA/USDI 1996 [see these documents for references]).

3.7.3.1 Redband Trout

Redband trout are a subspecies of rainbow trout. The rainbow trout is a widely distributed western North America native salmonid. Rainbow trout have been segregated into these three forms: 1) Coastal rainbow trout west of the Cascade/Sierra mountain divide; 2) Interior Columbia River redband trout upstream of Celilo Falls, including the Fraser and Athabasca

rivers in Canada, the upper Klamath River Basin, and the isolated interior basins of Oregon; and 3) the Sacramento-San Joaquin redband trout (Behnke 1992). Although the systematics are incomplete, physical characteristics and genetic studies support the view that these three rainbow trout forms warrant subspecific recognition (Allendorf 1975; Allison and Bond 1983; Berg 1987; Stearley and Smith 1983). The USFWS (FR Vol. 65, No. 54, pp. 14932-14936) recognizes the redband trout within the Planning Area as Great Basin redband trout.

Redband trout occupy a wide array of habitats (Scott and Crossman 1973). Research suggests that redband trout are found in a wide range of conditions, often more extreme than those associated with other species. Populations found in the southern Oregon deserts inhabit turbid and alkaline waters that range from near freezing to over 77º F (Johnson et al. 1985; Kunkel 1976; Zoellick 1995). Redband trout tolerate warmer waters than many other salmonids (Gamperl 2003); however, in warmer and drier environments the loss of riparian cover has been associated with reduced numbers and production of fish (Li et al. 1994; Tait et al. 1994).

Relatively little work has been completed to define habitat use for this fish, but patterns are generally similar to other salmonids. Thurow (1988) found redband trout most abundant in pool habitats and in association with cover components including undercut banks, large woody debris, and over-hanging vegetation. Some have suggested that redband trout, like steelhead, may be associated with higher gradient channels, often in riffles or with substrates dominated by boulders, cobbles and pocket water (Kunkel 1976).

Redband trout are widely distributed throughout the Interior Columbia Basin, including southern Oregon closed desert basins. In the Planning Area, it occupies the Donner und Blitzen River system, including Kiger Creek and McCoy Creek drainages; the headwaters of the Riddle Creek watershed; and Home, Threemile and Skull Creeks in the Catlow Valley. The Donner und Blitzen River system demonstrates three life forms of redband trout depending on water conditions in Malheur Lake: resident, fluvial and adfluvial.

Redband trout are considered a species of special concern by the American Fisheries Society and all states in the historical range, and are classified as a tracking species by the BLM (Williams et al. 1989). Six Great Basin populations, including populations in the Planning Area, were petitioned for listing as threatened or endangered under the ESA in 1997. The USFWS found that the most appropriate grouping of the six populations under consideration was as a single Distinct Population Segment, the biological unit managed for protection under the ESA of 1973. In March of 2000, the USFWS published a finding which stated that listing for these populations is not currently warranted (FR Vol. 65, No. 54, pp. 14932-14936). This determination was based, in part, upon evidence of moderate to high densities of redband trout in each of the six subbasins (Dambacher et al. 2001).

The limited distribution and small population sizes of redband trout located in Catlow Valley streams, as well as the Catlow tui chub, prompted the August 1997 completion of the "Catlow Redband Trout and Catlow Tui Chub Conservation Agreement and Strategy". This Conservation Agreement was entered into by the BLM, USFWS, Malheur NWR, ODFW, and a private land owner in order to expedite conservation measures needed for the recovery of the species. The agreement, which focuses on the fishes' habitat in Home, Threemile, and Skull Creeks, has these two objectives: 1) to reduce and eliminate significant threats; and 2) to enhance and/or stabilize specific stream reaches of occupied and unoccupied historic habitat. The public land portions of Threemile Creek and Home Creek are within the CMPA, and are included in the area covered by the Conservation Agreement. These efforts further contributed to the USFWS finding that the Great Basin redband trout did not warrant listing pursuant to the ESA (FR Vol. 65, No. 54, pp. 14932-14936).

Hybridization and competition are biotic factors influencing redband trout. Introduced fishes create risks of genetic introgression, competition for food and space, predation, and increased exposure to disease (Fausch 1988; Reisenbichler 1977). Introduced rainbow trout are now the most widely distributed fish in the Inter-Columbia Basin and have contributed to losses of the native redband trout genotype through introgression (Behnke 1992; Campton and Johnston 1985). In the Planning Area, documented hatchery rainbow trout stocking within the distribution of redband trout is limited to the Donner und Blitzen River subbasin. However, hatchery supplementation in the Donner und Blitzen River was discontinued upstream of the Page Springs gauging weir in the 1940s (ODFW 1983) and downstream of the weir

in 1992. Rainbow trout continue to be stocked in Krumbo Reservoir, Fish Lake and two small BLM reservoirs in the Donner und Blitzen River subbasin. The ODFW (1999) indicated a limited likelihood of hatchery trout escaping these waters and concluded a low risk of introgression with redband trout. Coordinated fish composition surveys conducted in the Donner und Blitzen River indicated no presence of hatchery rainbow trout upstream of the Page Springs gauging weir or in tributary streams upstream of Fish Creek (ODFW 1983). These surveys were conducted during the period when ODFW actively stocked rainbow trout in the Donner und Blitzen River. The ODFW (1983) further suggested that the redband trout gene pool is relatively unaltered upstream of the Page Springs gauging weir, which functions as a barrier to hatchery stocked rainbow trout. This report further recognizes hatchery rainbow trout as poorly adapted to the warm and often alkali waters of the Great Basin streams, where the native trout are more adapted to these environments (Bowers et. al. 1979). Genetic analysis of redband trout in Mud Creek and Bridge Creek, tributaries of the Donner und Blitzen River downstream of the Page Springs gauging weir, suggest limited to no genetic introgression from hatchery rainbow trout (Currens, unpublished report on file with ODFW). Although brook trout previously stocked in Fish Lake are reported to have moved into Fish Creek (ODFW 1980), a tributary of the Donner und Blitzen River, the ODFW (1983) did not observe brook trout in the Donner und Blitzen River. However, other fish species, such as carp and sunfish, that may compete for resources or prey upon redband trout are present downstream of the Page Springs gauging weir.

Fragmentation and isolation of habitats influence redband trout distribution and abundance. If watershed disturbances result in loss of corridors or connecting habitats, remaining redband trout populations can be progressively isolated into smaller and smaller patches of productive habitats. Corridors that provide habitat for migration, rearing, and over-wintering may be critical to the conservation of species where connections among population are important (Hanski and Gilpin 1991; Rieman et al. 1993).

Habitat degradation is a third factor influencing redband trout status. Great Basin redband trout habitats have been altered by a host of land use practices (Moskowitz and Rahr 1994; Williams et al. 1989). Thurow (1988) reported four principle effects from water diversions: dewatering of stream reaches, loss of fish in unscreened diversions, blockage of migration corridors, and alteration of stream channels by earthmoving equipment. The loss or conversion of riparian cover has been caused by grazing, mining, urbanization, and agriculture (Meehan 1991). In desert climates, the loss of riparian canopy has been associated with excessive temperature and reduced redband trout abundance (Li et al. 1994; Tait et al. 1994). Channel alterations adversely affect stream hydraulics (Bottom et al. 1985), nutrient pathways (Schlosser 1982), invertebrate production (Benke et al. 1985), and fish production.

The Malheur NWR, in coordination with the ODFW, Trout Unlimited, and Oregon Trout, has been improving conditions for redband trout in the Donner und Blitzen River system through maintenance and modification of fish passage and screening at diversion facilities on the Malheur NWR (ODFW 1999).

3.7.3.2 Lahontan Cutthroat Trout

The Lahontan cutthroat trout is native to the Pleistocene Lake Lahontan Basin of northwestern Nevada, northeastern California, and a small adjacent portion of southeastern Oregon. It has been introduced elsewhere in southeastern Oregon and eastern Washington.

During the 1970s, Lahontan cutthroat trout from Willow and Whitehorse creeks were introduced into Denio, Van Horn, Pike, Mosquito, Little McCoy, Big Alvord, Little Alvord, Cottonwood, and Willow creeks in the Alvord Lake Subbasin. Surveys conducted in 1991 confirmed that many of the introduced Lahontan cutthroat trout still persist. A population of hatchery-produced Lahontan cutthroat trout also inhabits Mann Lake, Wildhorse Lake, and Wildhorse Creek. Since these fish originated from hatchery stock, they are not considered pure-strain Lahontan cutthroat trout and not considered a protected species.

Pursuant to the ESA, this subspecies is federally listed as threatened throughout its range. The BLM and the USFWS conduct interagency consultation pursuant to Section 7 of the ESA regarding authorization of grazing permits where Lahontan cutthroat trout are present and may be affected, except for hatchery produced populations. These consultations have concluded that current grazing practices are not likely to jeopardize the continued existence of the trout. The USFWS Biological Opinions (USFWS 2001, 1999, and 1995) further recognize that current livestock grazing practices associated with these permits allow for the continued improvement of instream and riparian conditions. In 1995, the USFWS office in Reno, Nevada formalized a cooperative management agreement among the ODFW, the Nevada Division of Wildlife, the USFS, and the BLM for the coordination and performance of activities identified in the

Lahontan Cutthroat Trout Recovery Plan. The primary purpose of the agreement was to provide specific direction to conserve the trout and reduce or remove threats that could prevent its recovery.

Although somewhat hardier than other cutthroats, the Lahontan subspecies requires cool water temperatures, deep-water refuges, and silt-free gravels for spawning. Optimal riverine habitat for Lahontan cutthroat trout is characterized as clear, cold water with an average maximum summer temperature of less than 22º C; an approximate 1-to-1 pool-to-riffle ratio; well-vegetated, stable stream banks; at least 50 percent of the stream area providing cover; a relatively stable water flow regime; and a relatively silt-free rocky substrate in riffle-run areas (USFWS 1995b).

Habitat degradation, especially loss of riparian vegetation, is identified as a key factor in declining Oregon stream populations. Loss of vegetation has, in some cases, contributed to increases in stream temperatures that exceed those considered optimal for the sub-species. Drought conditions coupled with extremely low temperatures and limited riparian cover may cause stream segments to freeze completely during winter. Loss of vegetation has resulted in the loss of forage organisms and cover (Hanson et al. 1993). Excessive turbidity and sedimentation also contribute to habitat degradation problems because of their effects on food production, spawning areas, and feeding ability (Hanson et al. 1993). Water diversions and the introduction of nonnative salmonids are also key factors. Observations and assessments of public land stream reaches in the Planning Area occupied by Lahontan cutthroat trout indicate that riparian and stream habitat conditions are naturally resilient to disturbance or have improved over recent historic conditions.

3.7.3.3 Borax Lake Chub

The Borax Lake chub is a small minnow restricted to the Borax Lake ecosystem of southeastern Oregon. Due to its restricted distribution and threats to its remaining habitat, it is listed as an endangered species by the USFWS and the State of Oregon. The BLM will continue to consult with the USFWS on any of its activities that may affect the Borax Lake chub or its critical habitat.

This species is known only from Borax Lake and associated waters in Harney County, Oregon. The Borax Lake chub is a sister taxon of the Alvord chub from which it became isolated as the waters of pluvial Lake Alvord receded (Williams and Bond 1983). The Borax Lake chub occurs in Borax Lake, which covers ten acres and is located within a 60-acre parcel of private land, its associated outflows including Lower Borax Lake (public land), and surrounding marsh and pools (mixed public and private).

From 1986 to 1988, population estimates for the Borax Lake chub ranged from 3,934 to 13,319 depending on the year and season (Williams 1995). Based on water conditions, hundreds of chub may occur in outflow creeks, and during wet years, up to a few thousand may occur in Lower Borax Lake.

The Borax Lake chub is restricted to the thermal waters of Borax Lake and its outflows. Waters flow out from the elevated rim of Borax Lake in many directions, but more typically to the southwest, where they enter a marsh and then flow into Lower Borax Lake (a reservoir). Reproduction is limited to Borax Lake; Borax Lake chub in other habitats gain access through interconnected out-flows and marshes. In Borax Lake, the species occurs throughout the lake except in hot spring inflows, where temperatures exceed approximately 34º C.

Threats of geothermal energy exploration and manipulation of surface flows from Borax Lake were the primary factors that resulted in the 1980 listing of the species by emergency provision under the ESA. Changes in thermal flows that enter the lake could cause slight temperature increases or decreases that would be detrimental to the species. Alterations in surface flows from Borax Lake could isolate subpopulations adjacent to the lake causing their desiccation. Due to the restricted size of the lake, threats also exist from introductions of chemicals or nonnative species. Protection of the fragile salt crusts that maintain water level at Borax Lake is also critical (USFWS 1987). Livestock grazing and physical damage from off-highway vehicles and humans are the primary risks to shoreline salt crusts. The species is also at risk because of its highly restricted range and specialized habitats. Borax Lake, lower Borax Lake, and the surrounding block of land totaling 640 acres is designated critical habitat for the Borax Lake chub.

3.7.3.4 Alvord Chub

Alvord chub are endemic to the Alvord Basin of southeastern Oregon and northwestern Nevada. It is a moderately sized minnow that inhabits marshes, creeks, and springs with little or no current. The American Fisheries Society considers the Alvord chub to be a species of special concern (Williams et al. 1989), and it is a BLM assessment species.

The Alvord chub is widely distributed within springs, creeks, and lakes in the Alvord basin. Williams and Bond (1983) reported Alvord chubs from 16 localities within the basin, including Serrano Pond, Trout Creek, Alvord Lake, and Pueblo Slough (in the Planning Area) in Oregon, as well as Bog Hot Creek, Bog Hot Reservoir, Thousand Creek Spring, Thousand Creek, Continental Lake, Warm Spring, Dufurrena Ponds, Gridley Springs, and West Spring in Nevada. The current distribution of this species has apparently changed little during the past 100 years except for a recent report of Alvord chubs in Juniper Lake, Oregon (Bond 1974), where they were introduced and subsequently disappeared, and the elimination of the Alvord chub population from Thousand Creek Spring.

The Alvord chub occurs in a wide variety of available habitats such as isolated springs, cool and warm water creeks, reservoirs, and lakes. Within the principal creek systems in the Alvord Basin, Trout Creek in Oregon and the Thousand-Virgin Creek system in Nevada, chubs occur commonly in the mid and lower elevation sections, but are rare or absent entirely from high elevations. Within spring systems, the Alvord chub occupies a variety of spring habitats except springs with water temperatures above 31º C. Alvord chubs are absent from Bog Hot Springs, which is fishless, and from Borax Lake, which is occupied by the Borax Lake chub.

Alvord chub appears capable of occupying a wide range of habitat conditions as long as relatively clean water persists that is free of introduced species. The Alvord chub has been eliminated from Thousand Creek Spring because of the presence of introduced guppies. Alvord chubs are absent from some ponds at Dufurrena, which are dominated by introduced sunfish (Williams and Bond 1983). Introductions of nonnative fish and diversion of stream flows pose the greatest immediate risk to populations. Maintenance of the integrity of aquifers that feed surface waters in the Alvord Basin is critical to the long-term persistence of this species.

3.7.3.5 Catlow Tui Chub

The Catlow tui chub, a small- to medium-sized minnow, is a recognized though undescribed subspecies of the more widespread tui chub. Genetic analysis of the Catlow tui chub is underway at Oregon State University. Due to their restricted distributions and threats to remaining habitat, the subspecies is considered of special concern by the American Fisheries Society (Williams et al. 1989), and it is a BLM tracking species.

Historically, Catlow tui chubs occurred in three streams (Threemile, Skull, and Home Creeks) that drain the west flank of the Catlow Rim and in Rock Creek along the western edge of Catlow Valley (Bills 1977; Kunkel 1976). The Catlow tui chub has a restricted range, but appears to be locally abundant in streams and in Threemile Reservoir. An exception is Rock Creek, where only a few were found in 1994. The limited distribution of the Catlow tui chub, as well as the Catlow redband trout, prompted the August 1997 "Catlow Redband Trout and Catlow Tui Chub Conservation Agreement" (see discussion above under Redband Trout).

Little is known about the habitat relationships of the Catlow tui chub. Their preference for low gradient reaches of Skull, Threemile, and Home Creeks suggests an affinity for low velocity habitats, which is typical of most tui chubs. They also appear to be well-adapted to Threemile Reservoir, at the downstream end of Threemile Creek. Catlow tui chubs occur in streams occupied by redband trout (Kunkel 1976).

Diversions of creek flows for irrigation reduce Catlow tui chub habitat. The low gradient reaches that it prefers are also subject to degradation from livestock overgrazing. Due to the Catlow tui chub's restricted distribution, disturbances such as drought, fire, and human land use practices place populations at risk.

3.7.3.6 Malheur Mottled Sculpin

Malheur mottled sculpin is a recognized, though undescribed, subspecies of the more widespread mottled sculpin. The Malheur mottled sculpin is endemic to the Harney Basin of southeastern Oregon, including the Silvies and Blitzen river systems. It is listed as a sensitive species by the State of Oregon and the BLM.

Historic distribution includes the Blitzen River and tributary streams on Steens Mountain, the Silver Creek drainage, the Silvies River and tributary streams, and the isolated drainages of Poison and Rattlesnake creeks. The sculpin in the Harney Basin is considered by Bailey and Bond (1963), Bond (1974), and Markle and Hill (2000), to represent an undescribed relative of the mottled sculpin in the Snake River drainage. Malheur mottled sculpin historically inhabited Harney Basin (Malheur Lake Basin) when it was connected to the upper Snake River, and became isolated in small creeks when the basin dried up perhaps as recently as 8,000 years ago. Through more recent geologic events, mottled sculpin from the lower Columbia River drainage have entered the basin. This recent form of mottled sculpin has been

hybridizing with the older, previously isolated form, though hybridization seems to be occurring mainly in northern Harney Basin. Samples collected within the Planning Area mostly resemble preliminary descriptions of Malheur mottled sculpin (Markle and Hill, 2000).

Very little is known about the life history of the Malheur mottled sculpin, but it is assumed to be comparable to that of other mottled sculpins. According to Bond (1974), the Malheur mottled sculpin requires cool-water streams with large gravel or rubble substrates for cover and spawning. It requires water temperatures below 26º C, with high dissolved oxygen and very low turbidity. Given these characteristics, the Malheur mottled sculpin can occupy small headwater streams and larger rivers such as the lower Blitzen River.

Malheur mottled sculpin appear to be very sensitive to changes in water quality, including increases in temperature, sediments, and turbidity. Biotic interactions are not specifically known, but the occurrence of the Malheur mottled sculpin would appear to be negatively correlated with the presence of introduced warm-water fishes such as catfish and sunfish, which are more tolerant of turbid water conditions. Elevated water temperature, increased turbidity, and sediment transport caused by activities such as livestock grazing, road construction, and timber harvest activities are detrimental to the sculpin and have been cited by the BLM as causes for the decline of Malheur mottled sculpin populations in Silvies, Hay, Yellowjacket, and Emigrant Creeks within the Silvies Basin.

3.7.4 Redband Trout Reserve

Portions of the Donner und Blitzen River located in the Steens Mountain Wilderness provide habitat for unique populations of wildlife, waterfowl, and fish, including a population of redband trout. The RTR was created by the Steens Act to conserve, protect, and enhance the Donner und Blitzen River population of redband trout and the unique ecosystem; and to provide opportunities for research, education, and fish and wildlife-oriented recreation. The RTR consists of the Donner und Blitzen WSR above its confluence with Fish Creek and the adjacent riparian areas on public land within the Steens Mountain Wilderness.

The management of this area is guided by the Steens Act, the WSR Act, the Wilderness Act, and the WSA IMP, in addition to the required consultation with the SMAC and the ODFW. Recreation would be allowed in the RTR as long as it is consistent with the previously mentioned acts and management guidelines, as well as specific management criteria developed in this RMP/EIS.

3.8 Paleontological Resources

Paleontological resources are defined as the fossilized remains of plants and animals. Of particular interest are vertebrate fossils such as those of camels, saber toothed cats, rhinos, mammoths, giant sloths, turtles, and horses. Fossil localities have been reported on public land in the Planning Area. Most of the finds have been exposed by wind or water erosion, and are widely dispersed. Several localities are the subject of ongoing academic research. Small exposures of Miocene sedimentary rocks are exposed at the base of the east face of Steens Mountain, west of the Folly Farm Road. Known locations of plant fossils are on private and public land, as well as several unexplored exposures that are likely to contain animal fossils.

A survey of known paleontological localities was conducted in May of 1999 within and near the CMPA. Animal remains from sabertooth cats, mastodons, giant camels, small camels (llama-like), horses and horned rodents were found. A plant locality within the area was reassessed and yielded a flora composed of the following plants: true fir, spruce, pine, Douglas fir, juniper, cottonwoods, willow, hornbeam, barberry, serviceberry, mountain mahogany, cherry, rose, mountain ash, indigo bush, sumac, maple, buckbrush, and madrona. This flora would normally occur in a small lake environment in a slightly warmer, more temperate climate than exists in the area today.

A new fossil locality was found in the fall of 1999 in Catlow Valley west of the CMPA. Animals identified in the preliminary analysis are beaver, peccary, camel, and cat. This find dates to the late Miocene to early Pliocene period (five to seven million years ago) and indicates that the Catlow Valley was then much wetter than it is today.

These fossil localities, especially the known and potential localities, are highly significant because they are a window to an environment that existed millions of years ago. They are nonrenewable, extremely fragile, and very small in areal extent. The precise number of acres encompassed by these localities is unknown because they have not been completely described and mapped.

3.9 Cultural Resources

A cultural resource is generally defined by federal agencies as any location of human activity that occurred at least 50 years ago, and that is identifiable through field survey, historical documentation, or oral evidence. Native American traditional practice areas are a special category of cultural resources. Some cultural resources may be less than 50 years old, but have cultural or religious importance to American Indian tribes or paramount historic interest to the public.

Federal antiquity laws require consideration of cultural resource values through consultation, a process designed to encourage protection of cultural properties prior to project approval. This often necessitates intensive surveys and recording where existing data are insufficient to make an assessment. If significant sites cannot be avoided during construction activities, the adverse effects are mitigated through data recovery by excavation, surface collection, photography and recording, and analysis.

Prehistoric, or pre-Euro-American contact, cultural resources include lithic scatters, rock shelters, midden deposits, house depressions, petroglyphs, hearths, and rock alignments. Historic cultural resources include buildings and building ruins, wagon roads, irrigation ditches and associated structures, dams, and archaeological deposits such as trash scatters.

Almost all of the cultural resource inventories in the Planning Area have been for project-specific activities, rather than initiated by the Cultural Resource Program; therefore, the surveys are not necessarily in areas of highest site potential. Only seven percent of the public land in the Planning Area has been inventoried for cultural resources. Earlier inventories and site records are of poor quality and do not conform with more recently approved data standards of the State Historic Preservation Office or the BLM Cultural Resource Program.

The archaeological record in the Planning Area is extensive in terms of the numbers of sites and their antiquity. Evidence exists in the Planning Area of some of the earliest occupation in North America, 10,000 years ago. Prehistoric sites are those older than about 1850 A.D. and include the following: stone flake scatters, habitation sites, toolstone quarries, rock shelters and caves, rock art and rock structures such as rock rings (wickiup supports), and hunting blinds. Historic sites post-date 1850 A.D. and include the following: abandoned and intact townsites, homesteads, buildings, stone or wood structures, wagon roads, military sites, and trash scatters.

Since the late 1970s, 658 cultural properties have been recorded in the Planning Area (163 in the CMPA and 495 in the AMU). Cultural resources have been degraded by natural processes such as erosion and by human actions such as road construction, livestock grazing, rangeland development, recreation, OHV travel, and illegal artifact collection and excavation. In recent decades, federal agencies have attempted to minimize damage to significant National Register of Historic Places eligible cultural resources. Table 3.13 summarizes the condition of sites in the Planning Area.

Table 3.14 summarizes the occurrence of various impacts to archaeological sites in the CMPA and the AMU. Multiple impacts were reported at a number of sites. The number of occurrences exceeds the number of sites in each management unit. Impact agents totaling less than one percent were not summarized.

3.10 Native American Traditional Practices

Prior to Euro-American settlement, the Planning Area was occupied and used by Northern Paiute bands. Many of their descendants now live on the Burns Paiute Reservation in Burns, Oregon; the Warm Springs Reservation in Warm Springs, Oregon; and the Fort McDermitt Reservation in McDermitt, Nevada.

No Native American traditional practice areas have been identified to BLM staff in the Planning Area. However, according to the Burns Paiute Tribal Cultural Resource Manager, traditional resource areas used by tribal members and known tribal historic sites do exist in the Steens Mountain area. In addition, Steens Mountain served as a hideout or refuge during and after the Bannock War of 1878. Some of the Burns Paiute Elders refer to Steens Mountain as “Old Man.” Specific traditional practice site location information has not been released to the BLM because the tribe is concerned about data security.

Resources traditionally used in the Planning Area include a wide variety of plant and animal foods, as well as materials for making tools and shelter. Edible roots include biscuitroot, bitteroot, camas, carrots, and onions. Available in the area are seeds of goosefoot, Indian rice grass, Great Basin wild rye, and berries such as chokecherry, currants, and elderberry. Game animals include various waterfowl, trout and chub, marmots, antelope, and big horned sheep, which are found in specific habitats in the Steens Mountain area. Other game such as mule deer, waterfowl, sage-grouse, rabbit, and ground

squirrel have more widespread distribution. Plants such as red osier dogwood, willow, tules, and cattails are found in riparian or marshland settings, while grasses for basketry and food seeds are encountered in upland and sand dune environments. The wide bands of quaking aspen on the mid-slopes of Steens Mountain are sources of posts for hide working, and mountain mahogany for bows and digging sticks grows on the rocky ridges at and above the juniper zone. Obsidian, basalt, and cryptocrystalline silicate toolstone sources are found at various locations in the Planning Area.

3.11 Visual Resources

The FLPMA requires the BLM to consider the effects of management actions on the visual quality of the landscape. VRM classifications are determined from visual resource inventories. The objectives for each of four VRM classes are listed below.

Class I - The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention. Class I is assigned to those areas where a management decision has been made to preserve a natural landscape. This includes areas such as wilderness, wild sections of WSRs, and other congressionally and administratively designated areas (i.e., WSAs).

Class II - The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

Class III - The objective of Class III is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

Table 3.13: Archaeological Site Condition

Management Unit	No Report	Excellent	Good	Fair	Poor	Destroyed	Total
CMPA	0	30	94	12	20	7	163
Percent of Total	0%	18%	58%	7%	12%	4%	99%
AMU	77	123	204	47	35	9	495
Percent of Total	16%	25%	41%	9%	7%	2%	100%
Planning Area	77	153	298	59	55	16	658

Table 3.14: Occurrence of Various impacts to Archaeological Sites

Management Unit	Erosion	None	Grazing	Illegal Collecting and Excavation	Unknown	Road	Weathering	Archaeological Research	Fire	Range Improvements	OHV	Recreation Activites	Animal Burrowing	Total Occurrences
CMPA	33	34	43	61	13	10	7	6	8	2	2	5	6	230
% of Total	**13**	**14**	**18**	**26**	**5**	**4**	**3**	**3**	**3**	**1**	**1**	**2**	**3**	**96**
AMU	214	111	98	57	46	28	29	19	19	12	14	9	10	666
% of Total	**32**	**16**	**14**	**8**	**7**	**4**	**4**	**3**	**3**	**2**	**2**	**2**	**1**	**98**

Class IV - The objective of Class IV is to provide for management activities that require major modification of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate

the view and be the major focus of viewer attention. However, every effort should be made to minimize the impact of these activities through careful location activities, minimal disturbance, and repeating the basic landscape elements.

This RMP will reassess the VRM classes under which public land will be managed. Thus, the proposed VRM class may differ from the class indicated by the current inventory.

VRM Class I is assigned to those areas for which a previous decision has been made to maintain a natural landscape. This includes wilderness areas and other congressionally and administratively designated areas. BLM policy includes WSAs until such time as these areas are designated as wilderness or released by Congress for other uses. Since many WSAs do not necessarily contain exceptionally high scenic values, the primary objective of WSA management is to retain its natural characteristics essentially unaltered by humans during the time it is being managed as a WSA. If the WSA is designated as wilderness, the area would continue to be managed as VRM Class I; however, if the WSA is released to multiple use management, the RMP for the area would need to be amended and appropriate VRM class(es) assigned. This policy applies to all future plans and plan amendments.

To help meet the management objective of a VRM class, the BLM's visual contrast rating system is employed for proposed projects and activities to help analyze and mitigate any visual impacts to the existing landscape. This systematic process uses the basic design elements of form, line, color, and texture to compare the proposed project/activity with the features of the existing landscape.

3.12 Social and Economic Values

The AMU encompasses a large segment of southern Harney County and a small portion of southwestern Malheur County. The CMPA lies entirely within Harney County. Part of the Mineral Withdrawal Area lies within Malheur County and the Vale District's Jordan Resource Area; however, the effects of the withdrawal in that Resource Area have been addressed in the SEORMP. To compile an economic profile of the management units within the Planning Area, Harney County was selected as the analysis unit. The portion of Malheur County within the Planning Area is remote, with no human habitation and little economic value.

Harney County encompasses 10,134 square miles. The cities of Burns and Hines comprise the primary economic center of Harney County. Over 61 percent of the county's population resides in these two adjacent cities. Burns and Hines are located approximately 290 miles from Portland in southeastern Oregon. Burns is the county seat of Harney County and both Burns and Hines are the location of many federal, state, and local government offices. Most basic goods and services are available in Burns/Hines. Redmond, Oregon is the nearest community with commercial air service. No passenger train service is available to Burns or Hines.

Several smaller communities are also located within the Planning Area, including Frenchglen and Fields. Services for residents and visitors are limited, but do include fuel, campground, motel or resort facilities, a small store, a restaurant, and one or two churches.

The following are social and economic goals and strategies taken from the Harney County Strategic Plan for 2002.

Goal for Quality of Life - The quality of life in Harney County is characterized by maintaining the following: clean air and water and starry nights; vast open spaces of great natural beauty; warm, western atmosphere; and friendly, hospitable communities, each with its own beauty and character.

Strategy - The quality of life in Harney County is characterized by enhancing the following: social amenities in cultural, spiritual and civic opportunities; every generation contributing to the balanced community; pro-actively eliminating social and substance abuses; lowering crime rates by concerted efforts at prevention, enforcement and rehabilitation; and fostering respect for diverse cultural and ethnic contributions.

Goal for the Economy - Harney County is creating an economy in which per capita income meets or exceeds Oregon annual average with unemployment rates at or below Oregon's annual average.

Strategies - Harney County has implemented or maintained the following strategies: 1) promote tourism to meet economic goals; 2) create jobs and promotes a sustainable economy; 3) maintain and invite diverse industries that are clean, supportive of the community, offering a wide salary range to an exceptional workforce; 4) a diversified mix of resource based industries which provide a sustainable economy; 5) developed energy resources to support a sustainable

economy; 6) cooperation between public and private interests to strengthen economic opportunities and is a base for government jobs to manage southeastern Oregon public lands; 7) development and maintenance of infrastructure capacity to meet or exceed demand for the following: water, transportation, sewer, education, energy, health care system, telecommunications, community facilities, and social and government service

3.12.1 Economic Findings from the ICBEMP

The ICBEMP included an examination of Harney County generally and the communities of Burns and Hines specifically. Smaller unincorporated communities were not examined. The Draft Eastside EIS concludes that Harney County, located in the Boise trade center, is an area of low economic and social resiliency. This determination is based on the county's dependence on public land timber and forage and the fact that 21 percent of the county budget is derived from federal land payments (USDA/USDI 1997). USFS lands are eight percent of the land base while BLM administered lands represent 62 percent of the land base.

Burns and Hines are analyzed in the subsequently released document, Economic and Social Conditions of Communities: Economic and Social Characteristics of Interior Columbia Basin Communities and an Estimation of Effects on Communities from the Alternatives of the Eastside and Upper Columbia River Basin Draft EISs (Reyna 1998). In the document, Burns was found at that time to have high timber employment specialization and medium agricultural employment specialization. Hines was also found at that time to have very high timber employment specialization and high agricultural employment specialization. Timber is no longer a major source of employment in Burns or Hines.

3.12.2 Population, Age Distribution, and Ethnicity

Harney County is among Oregon's least populated counties, with 0.8 persons per square mile. Except for Burns, Hines, and a few other population centers, the county is rural in character. Table 3.15 displays the census population in 2000 for Oregon, Harney County, Burns, and Hines, as well as the population estimates for Oregon and Harney County in 2001 (U.S. Department of Commerce 2002). The population declined 2.7 percent in Harney County between 2000 and 2001 while the state population increased 1.5 percent.

A relatively high percentage of Harney County's population is age 65 or older. In 2000, there were 1,141 individuals 65 or over, comprising 15 percent of the population, compared to 12.8 percent for the State of Oregon; 26 percent of the population was under 18 and Harney County's median age in 2000 was 38.9. Age distribution for the state in 2000 showed a slightly younger population trend overall; in Oregon, 24.7 percent of the population was under 18 and the median age was 36.3 (U.S. Department of Commerce 2002).

Table 3.15: Census Population in 2000 and 2001 Population Estimates for Selected Areas

Geographic Area	Population (2000)	Population Estimates (2001)
Oregon	3,421,399	3,472,867
Harney County	7,609	7,404
Burns	3,064	
Hines	1,623	

Harney County has limited ethnic diversity with small populations of Hispanic and American Indian residents. Table 3.16 shows the approximate population percentages (for individuals recorded under the single race heading in the 2000 census data) for the White, American Indian, and Hispanic sectors of the population in Harney County; the three Census County Divisions (CCDs) in the county, as well as the State of Oregon (U.S. Department of Commerce 2002).

The Diamond CCD covers the southern portion of Harney County and includes the Planning Area. The American Indian population is substantially lower in this CCD as compared to the rest of Harney County and the state. The Hispanic population is higher in this CCD as compared to the rest of Harney County, but lower than the state as a whole.

Table 3.16: Population Percentages in Harney County

Geographic Area / Population	Race (percent of total in area[1])		
	White	Hispanic	American Indian
Oregon - 3,421,399	86.6	8.0	1.3
Harney County - 7,609	89.7	4.2	4.0
Burns CCD[2] - 5,621	88.6	4.1	4.9
Drewsey CCD - 658	93.2	3.6	1.5
Diamond CCD - 1,330	91.8	6.1	0.8

[1] Population percentages do not include responses from the two or more race category in the 2000 census data; rather, they were derived from the single race category.
[2] CCDs are Census County Divisions. Burns equates to the northwestern portion of the county, Drewsey to the northeastern portion of the county, and Diamond to the southern portion of the county and includes the Planning Area.

3.12.3 Employment and Wages

In 2001, nonfarm payroll employment averaged 2,610 in Harney County. The average total employment was 3,323. Federal, state, and local governments (government sector) employed the greatest number of people with average employment of 1,170. The wholesale and retail trade sector employed an average of 510 people, while the services sector employed an average of 380 people (Oregon Employment Department 2002). Employment in the government sector declined between September 2001 (1,230) and September 2002 (1,160). The trade sector increased employment during this same time going from 510 workers in September 2001 to 520 workers in September 2002. The services sector also increased. Employment went from 400 in September 2001 to 420 in September 2002. Total nonfarm payroll employment peaked at 2,950 in 1999 followed by an average decline of 5.0 percent in 2000 and 9.0 percent in 2001. Harney County lost 400 jobs between 1999 and 2001, most of which were in the manufacturing sector. In 2001, agricultural employment in Harney County was estimated to be 520 (Oregon Employment Department 2002).

There were great fluctuations in unemployment in Harney County during 2001. The average unemployment for 2001 was 14.1 percent, with a low of 10.6 percent in October 2001 and a high of 19.8 percent in February 2001. Overall unemployment in Harney County declined between September 2001 and September 2002, dropping from 11.0 percent to 6.3 percent. This improvement can be attributed to some level of recovery in the job market as well as attrition from the local labor force. Estimates state that the Harney County Labor force declined by 160 individuals between 2000 and 2001 and it appears that the same trend is continuing in 2002 with an estimated decline of an additional 270 individuals (Oregon Employment Department 2002). The most current data from the Oregon Employment Department states that Harney County had an estimated unemployment rate of 14.3 percent in April 2003 with 3,274 persons employed and 545 unemployed (2003). Unemployment was higher for April 2003 than either March of 2003 (3,295 employed) or April of 2002 (3,325 employed). It is unusual for the unemployment rate in Harney County to increase between March and April. This has not been the case historically. April 2003 also marks the seventh month the unemployment rate has increased in Harney County.

The median household income for Harney County was lower than the median income for the state of Oregon in 1999. Harney County had a median household income of $30,957 in 1999, which was approximately $10,000 less than the state of Oregon at $40,916.

3.12.4 Per Capita Income and Poverty Rates

The per capita personal income in Harney County was $21,119 in 2001, lower than Oregon's statewide level of $28,222 (Oregon Employment Department 2003). Harney County also has a higher portion of income derived from transfer payments (19 percent) than the state as a whole (13 percent). Transfer payments include Social Security, Aid to Families with Dependent Children, unemployment compensation, disability, and other government payments. Typically, transfer payments are a major source of income for retirees and low-income people. Total income derived from dividends, interest, and rent (22 percent) in Harney County was the same as that type of income statewide (22 percent). This income represents returns on accumulated assets held by individuals and is often a large portion of income for the self-employed and retirees. Earned income, typically wages and salaries, was 48 percent of income in Harney County, below the statewide proportion of 56 percent (Oregon Employment Department, No Date).

Poverty rates in Harney County are similar to the state as a whole. In 1999 there were 8.6 percent of families and 11.8 percent of individuals below poverty status in Harney County, with 7.9 percent of families and 11.6 percent of individuals below poverty status in Oregon.

3.12.5 Economic Activity Generated by Public Land Resources

The BLM and other public land management agencies often make commodities available for use by the private sector. Both the BLM and the USFS make rangelands available to private ranching concerns on a renewable permit basis. A fee is collected for each grazing head of livestock. Similarly, the BLM and the USFS sell timber to private firms; however, no USFS lands or other commercial forest lands exist in the Planning Area portion of Harney County. For this reason, timber harvests from BLM land within the Planning Area have not been a source of economic revenue.

There are no energy or minerals facilities operating in the Planning Area portion of the county, so these are not a source of economic revenue.

The BLM conducts wild horse gathers approximately every three to four years. These animals are made available for adoption through the Wild Horse Adoption Program. The contractors, which are hired to conduct the gathers, are from out of the area and the money raised through the adoption fees is sent directly back to the national program. Harney County does not see a direct economic benefit from these activities; however, there are indirect benefits associated with the rare horse breeds and the adoption activities, which attract visitors and attention to the area and lead to local spending that would not otherwise occur.

Agricultural activities in Harney County are not considered highly labor intensive, and are limited primarily to production of hay, forage, and livestock. Harney County agriculture focuses on the following products: (1) beef, with sales of $41,129,000 in 2001 and (2) alfalfa, with 2001 sales of $13,068,000 (Oregon Agricultural Information Network 2002). The highest individual agricultural sales revenue in Harney County is derived from cattle ranching, which is inextricably linked to the commodity value of public rangelands. The BLM collected an average of approximately $145,000 annually in livestock grazing fees over the past ten years. This number is based on 107,000 AUMs at $1.35 per AUM. The average number of livestock grazing public land each year is 24,500. The BLM spent $93,680 on range improvement projects in 2002, of which 84 percent went to local contractors.

The 1997 Census of Agriculture stated that there were 504 farms in Harney County and that approximately 75 percent were owned by families or individuals. Total gross farm sales in Harney County totaled $58,618,000 in 2001 (2002). Crop sales were $15,317,000 and animal product sales made up the rest ($43,301,000). The United States Bureau of Economic Analysis estimated a net farm income of $2,716,000 for Harney County in 2000, which had gross sales of $50,418,000. According to Harney County website, the "cattle industry is counted on to provide an average of $28,000,000 per year to the economy of the county" (www.harneycounty.com 2003). In addition, nearly half of the county taxes come from the ranching community (www.harneycounty.com 2003).

The Planning Area fire management strategy focuses on wildland fire suppression and prescribed fire. The wildland fire season generally runs from mid-May through mid-September, while prescribed fires are usually planned for periods before and after the wildland fire season. Approximately 55to 60 temporary firefighters are employed each year during the fire season. In addition, local contractors are hired to assist with fire suppression and prescribed fire activities. Between $25,000 and $275,000 is spent each year on local contracts for fire management depending on the severity of the fire season.

Management of the lands, realty authorizations, and ROWs in the Planning Area has economic implications for the county and local economy. Fees are collected by the BLM for land use authorizations and ROWs. Land sales and retention and purchases can affect property tax revenues and potential commodity production; PILT are paid directly to the county. The average annual fees collected for land use authorizations and ROWs are $15,000. Property taxes collected in Harney County in 2002 totaled $4.9 million. Harney County also received $518,880 in PILT in 2002.

The Planning Area has private, state, county, and BLM roads. Some roads are maintained to a high standard while others are primitive two track routes which receive little or no maintenance. The Steens Loop Road (52.59 miles in length) maintenance contract is made available for bid to local companies and amounts to an average annual contracting expense of $40,000. Materials are purchased locally. Maintenance expenses are approximately $760 per mile for roads in the CMPA. Some of the road uses (e.g., recreation and livestock management) also contribute to the local economy. The revenues from recreation and ranching are discussed under those activities.

OHV use is a major form of recreation and is often associated with hunting and fishing. No data are available on OHV use in the Planning Area or expenditures by OHV enthusiasts in the local economy. However, it can be assumed that these recreators contribute to the economy through the purchase of goods and services such as gas, food, equipment, and lodging.

Hunting and other types of recreation also provide income to the county and local communities. According to data obtained from ODFW hunter surveys, Oregon's Mule Deer and Elk plans, and the 2001 National Survey of Fishing, Hunting and Wildlife-Associated Recreation (published by the USFWS), annual hunting trip-related expenditures were estimated at approximately $3,905,312 and $530,987 for Harney County and Steens Mountain, respectively. These expenditures include such things as transportation, food, and lodging and are based on 13,924 hunters in Harney County and 2,607 hunters in the Steens Mountain area spending 74,743 and 11,386 recreation days in Harney County and the Steens Mountain area, respectively. Numbers for wildlife viewing were not available for the county; however, estimates indicate that 1,680,000 participants spent $304,990 on trip-related expenses in 2001 in the State of Oregon.

The BLM collects recreation fees for campground use and SRPs. In 2002 a total of $40,488 was collected, down from $46,135 in 2001. This was consistent with the nationwide decline in travel and recreation in 2002. SRP fees collected over the past five years have ranged from a high of $4,130 in 1999 to a low of $3,227 in 2002. The fees collected in 2002 for the individual campgrounds were as follows: Page Springs Campground, $21,645; Fish Lake Campground, $9,776; South Steens Campground, $4,542; and Jackman Park Campground, $1,315.

The tourism industry in this area is small compared to other Oregon regions; however, tourism in Harney County provides a critical monetary inflow to the economy. For people seeking outdoor recreation and solitude, public lands in Harney County have much to offer. A 2001 report prepared for the Oregon Tourism Commission, Oregon Travel Impacts, 1991-2000, estimated that travel-related spending in Harney County totaled $18,000,000 with $2,500,000 attributed to travelers staying in public campgrounds during 2000 (Dean Runyan and Associates 2001). Travel is responsible for 6.5 percent of the employment in Harney County. Updated estimates show that travel-related spending in Harney County in 2001 was $18,300,000 and was responsible for 7.4 percent of employment. Travel-related spending in Harney County increased 5.2 percent between 1991 and 2001. Revenues from travel accounted for $3,900,000 in earnings and 340 jobs in Harney County for 2001 (Oregon Tourism Commission 2003).

The 1994 Oregon High Desert Interpretive Center Economic Feasability and Impact Analysis for Harney County and Burns, Oregon (Dean Runyan and Associates et al. 1994) stated that approximately 50,000 people visited both the Steens Mountain area and the Malheur NWR in 1993. Assuming visitation has remained similar between the two destinations and based on numbers determined in the Regional Economic Benefits of Ecotourism and Operations Associated with the Malheur NWR (Northwest Economic Associates [NEA] 2002), visitation to the CMPA may have been as high as 62,700 between October 1, 1999 and September 30, 2000. The NEA analysis found that visitor expenditures in Harney County amounted to over $1,900,000; this equated to $1,200,000 of direct spending within the county (NEA 2002).

It is likely that tourism and visitation to the Planning Area will continue to increase in the long term due to population growth within a day's driving time of the area and the increased publicity the Steens Mountain area is receiving.

The designation of the Steens Mountain Wilderness may attract additional visitors and contribute to the local economy. In a study conducted by Loomis and Richardson (2001), dollar values were determined for recreation benefits, visitor expenditures, and passive use values associated with wilderness in the United States. The average value derived from recreation benefits (benefits to visitors based on their willingness to pay over and above their current trip costs) is $40 per visitor day. Visitor expenditures (eg. gas, food, lodging, fees, and equipment) average $30 per day. Passive-use values are the combination of existence values (knowing wilderness exists and is protected) and bequest values (providing this resource for future generations). The passive-use value is $168 per acre of wilderness (Loomis 2000). Based on these findings, the passive-use value for the Steens Mountain Wilderness would be $28,574,112 ($168 times 170,084 acres). Recreation benefits and visitor expenditures cannot be calculated for the Steens Mountain Wilderness because the wilderness area is too new to have quantified visitor use data. Economic benefits may be realized from the presence of wilderness through attraction of new residents and businesses and increased property values for those lands adjacent to the wilderness (Loomis and Richardson 2001; Rudzitis and Johnson 2000; Lorah 2000). Ecological services, which have been quantified in a number of studies, are additional benefits associated with wilderness. They include watershed protection, carbon storage, nutrient cycling, and fish and wildlife habitat (Loomis and Richardson 2001; Loomis 2000).

3.13 Energy and Minerals

The BLM manages energy and mineral resources on 1,649,000 acres of land that has federal surface and federal subsurface (mineral estate) ownership within the Planning Area ("Public Lands" in Table 3.17). The BLM manages a total of 72,000 acres of land with nonfederal surface and federal subsurface ownership within the Planning Area. The BLM manages a total of 1,000 acres of land with nonfederal surface and partial federal subsurface ownership (ownership of specific mineral resources such as oil and gas resources) in the Planning Area. There is nonfederal subsurface ownership on 552,000 acres of land within the Planning Area, which is 25 percent of the land. Detailed information is on master title plats available in each BLM DO.

Table 3.17: Mineral Ownership by Acres

Andrews RMP Planning Area	Total
Planning Area	
Public lands[1]	1,649,000
All minerals reserved[2]	72,000
Partial minerals reserved[3]	1,000

[1]Public Lands = Surface and mineral estates both under BLM administration.
[2]All Minerals Reserved = Nonfederal surface, 100 percent federal mineral estate.
[3]Partial Minerals Reserved = nonfederal surface, less than 100 percent federal mineral estate.

The Mineral Withdrawal Area designated by the Steens Act encompasses 1,181,362 acres and covers the entire CMPA and Steens Mountain Wilderness, as well as the eastern portion of the AMU, a section of the Jordan Resource Area, and the Diamond Craters area of the Three Rivers RA (Map 2.17). Subject to valid existing rights, no mining or exploration will be permitted anywhere in the Steens Mineral Withdrawal Area. Exceptions are the existing gravel operations within the Steens Mineral Withdrawal Area, which are permitted by the Steens Act as follows: Section 401(b) of the Steens Act "... The Secretary may permit the development of salable mineral resources, for road maintenance only, in those locations identified ... as an existing 'gravel pit' within the mineral withdrawal boundaries (excluding the Steens Mountain Wilderness, WSAs, and designated segments of the National Wild and Scenic River System) where such development was authorized before the date of enactment of this Act."

The Congressionally-designated Mineral Withdrawal Area closed 748,119 acres in the Planning Area to mineral location under the 1872 Mining Law. Six grandfathered claims covering 120 acres are located in the Mineral Withdrawal Area. In WSAs outside of the Mineral Withdrawal Area covering 433,243 acres, claims may be located but no surface-disturbing mineral activity requiring reclamation will be authorized until Congress acts to designate all, part, or none of the WSAs as wilderness. Since no pre-1976 claims are in any of the WSAs in the Planning Area, there can be no claims with grandfathered or valid existing rights in these areas. The following sections discuss the implications of the Mineral Withdrawal Area as it relates to each of the energy and mineral resources.

3.13.1 Energy Resources

No oil, gas, or coal resources have been documented, and potential for oil and gas resources is low throughout the Planning Area. A Known Geothermal Resource Area (Alvord) exists that is within the Mineral Withdrawal Area except for 332 acres northwest of Fields. Twelve deep (greater than 1,000 feet) geothermal wells were drilled within the Alvord Known Geothermal Resource Area. High potential for geothermal resources exists in the Known Geothermal Resource Area and in the area to the east of it. The remainder of the Planning Area has moderate potential for geothermal resources.

There is no commercial wind, solar, or other renewable energy development within the Planning Area and no known proposals for this type of development. The BLM, in cooperation with the National Renewable Energy Laboratory, an agency of the Department of Energy, has developed a Renewable Resource Assessment Project. The findings of this project are contained in a BLM draft report entitled "Assessing the Potential for Renewable Energy on Federal Lands". The report identifies criteria that are considered in establishing potentials for various types of renewable energy. It also summarizes these potentials and identifies the top 25 BLM planning areas with the highest potentials for various classes

of renewable energy development and "top pick" planning areas for combined renewable energy development. The Planning Area was not included in any of the top 25 for any class of renewable energy nor was it a "top pick" planning area.

An example of the report findings is the criteria used for establishing potentials for wind. These criteria include: areas with Wind Class 3 or greater; sites must be within 25 miles of a major power transmission line and within 50 miles of a major road or railroad; and the surrounding land use must be compatible with wind energy development. Other factors considered in wind potentials include ease of permitting and siting, regional market conditions, proximity to population centers, elevation, slope, and site size and configuration. The Planning Area has few areas with Wind Class 3 or better. Higher classes are generally located on the crests of the area's mountain ranges including the Steens, Trout Creeks, and Pueblos where wind development would be incompatible with the various special designations affecting these locations.

Any proposals for wind energy development would be processed in accordance with a new Interim BLM Wind Energy Policy which provides consistent guidance on the timely processing of wind energy ROW applications and that addresses the following: 1) land use plan requirements for wind energy development; 2) authorizations for wind energy activities; 3) establishment of rental fees for various types of development; 4) efficient processing and tracking of applications; 5) due diligence requirements; and 6) requirements for environmental review of wind energy activities.

3.13.2 Locatable Minerals

Locatable minerals in the Planning Area are gold, mercury, uranium, diatomite, copper, molybdenum, and sunstones. Exploration is sporadic and currently only one exploration/mining area is active, containing sunstones.

The potential is high for hot springs type gold and mercury deposits in the Lone Mountain area (in the southwestern part of the AMU); in the area between the community of Andrews south through the Pueblo Mountains; on the east side of Steens Mountain in the Alvord Hot Springs area; in the Flagstaff Butte area; and in the southeastern corner of the Planning Area. The east side of Steens Mountain and the Flagstaff Butte area also have high potential for uranium. Part of the Flagstaff Butte area has moderate potential for diatomite. The Pueblo Mountains and Pueblo Valley areas have moderate potential for gold in quartz veins. The Pueblo Mountains have moderate to high potential for porphyry deposits of copper, gold and molybdenum. In October 2001, 37 mining claims were in the Planning Area; six are claims subject to valid existing rights within the Mineral Withdrawal Area east of the CMPA.

Map 2.17 shows the location of the Mineral Withdrawal Area. Table 3.18 summarizes the number of acres with high, moderate, or low potentials for selected leasable and locatable minerals. The table acreages include lands within the Mineral Withdrawal Area and non-BLM administered lands. The table shows acreages for moderate and low potential for hot springs gold/mercury and for uranium.

3.13.3 Leaseable Minerals

This mineral category includes oil and gas, coal, geothermal, and sodium mineral resources. The BLM has developed four categories to manage leasable minerals in a manner that minimizes conflict with other resource values as follows: (1) open to leasing subject to standard terms and conditions; (2) open to leasing subject to special stipulations that may include seasonal NSO, other timing limitations, or special stipulations (controlled surface use limitations); (3) open to leasing subject to NSO; and (4) closed to leasing.

Rose Valley Borax Company mined borax in the area south of Alvord Lake 100 years ago. The borax mining operation lasted for ten years and shut down when sodium borate levels fell below economic levels. Currently, there are no mineral leases in the Planning Area.

The mineral withdrawal boundary is shown on Map 2.17. Sodium mineral resources have high potential in the Alvord Lake area and low potential outside that area. The Alvord Lake area is within the Mineral Withdrawal Area.

Table 3.18: Mineral Potential in Acres

Commodity	Low	Moderate	High	Total[2]
Leasables[1]				
Oil and gas	2,178,000	0	0	2,178,000
Geothermal	0	1,613,000	565,000	2,178,000
Sodium/potassium minerals	2,163,000	0	15,000	2,178,000
Locatables				
Hot-springs gold and mercury	442,000	1,397,000	339,000	2,178,000
Uranium	509,000	1,559,000	110,000	2,178,000
Vein gold	2,105,000	73,000	0	2,178,000
Copper, gold and Molybdenum (Porphyry)	2,157,000	14,000	7,000	2,178,000
Diatomite	2,148,000	0	30,000	2,178,000

[1]Variations in acreage totals between leasable minerals are due to differences in the mineral reservations; i.e., in many cases, only one of the leasable minerals (e.g., oil and gas) was reserved.
[2]Acreage includes land within the Mineral Withdrawal Area and non-BLM administered lands.

3.13.4 Saleable Minerals

This group of minerals includes sand, gravel, and rock aggregate in this area. Petrified wood and obsidian are rare. There are large amounts of sand, gravel, and rock aggregate available, but they are generally located in visually or ecologically sensitive areas. Development has been limited to road construction and maintenance projects.

The Steens Act allows for development of saleable mineral resources within the Mineral Withdrawal Area, for road maintenance only, at locations identified in the Steens Act. Some of those identified sites are located in exchanged land or are exhausted and in reclamation status. Within the Steens Mineral Withdrawal Area there are three designated rock aggregate sources and four sand and gravel sources that may be developed. In the Planning Area, outside of the Steens Mineral Withdrawal Area, there are eight designated sand and gravel sources, two rock aggregate sources, and two state ROW sites. The two state ROW sites are for use by the Oregon Department of Transportation on state highways.

3.14 Wild Horses and Burros

The Wild Free-Roaming Horse and Burro Act (PL 92-195) states: "It is the policy of Congress that wild free-roaming horses and burros shall be protected from capture, branding, harassment, or death; and to accomplish this they are to be considered in the area where presently found as an integral part of the Public Lands." After passage of this act in 1971, the Planning Area was inventoried for free-roaming horses and burros. Seven areas in the Planning Area were designated as Herd Areas where wild horses were found. No burros were found in these areas.

Past land use planning decisions designated the entirety of four of the Herd Areas as HMAs and the majority of another as a HMA for the maintenance and management of wild horse herds. These planning decisions also determined that horses would not be maintained in two Herd Areas and a portion of a third. Wild horses were not maintained in Herd Areas because of one or more of the following reasons: majority of the area was private lands; lack of publically owned water sources; a low number of horses precluded maintenance of a viable herd; conflicts with bighorn sheep; and the legal claim of horses by private parties.

Wild horses in the Heath Creek-Sheepshead HMA have unrestricted access to the adjacent Sheepshead HMA located in the Vale District. Horses in these two units mix and are one population. These HMAs were administered as two units due to the political District boundary between the Burns and Vale Districts. The SEORMP (USDI 1998b) determined

that these two HMAs would be managed as one unit and provided guidelines and decisions for management of the combined Heath Creek-Sheepshead/Sheepshead HMA.

Wild horses in the Alvord-Tule Springs HMA have access to and freely mix with horses located in the adjacent Coyote Lake HMA that is in the Vale District. The two HMAs are separated by a partially unfenced political boundary between the Burns District and the Vale District.

Previous land use plans established AMLs for each HMA to maintain public land resources in a satisfactory condition. The Three Rivers RMP (USDI 1992) defined AML as the optimum number of wild horses and burros that contributes to a thriving natural ecological balance on public lands and protects the range from deterioration. In the previous land use plans for the Planning Area, AML is expressed as a numerical range with a low and high number that defines the number of wild horses to be managed for in each HMA. In establishing the AML range (Table 3.19), the following issues were considered: maintenance of a thriving, natural ecological balance; biological/social need of the herds; economics of management actions; reasonable cycles of gathering; and the population at which resource deterioration could be expected. Monitoring data conducted throughout the duration of these plans support maintaining established AMLs. Forage allocations for horses in the HMAs were based on the maximum number of horses in the AML range except in the Heath Creek-Sheepshead HMA where horses migrate to the adjacent Sheepshead HMA during portions of the year.

To prevent resource overuse and to maintain a thriving ecological balance, gathering takes place as a herd reaches the maximum number in the established AML range, and when monitoring data indicate that an excess number of horses exists. Depending on reproductive rates, results of range and monitoring data, death rates, funding, public concern, and other special management considerations, horses are gathered and removed every three to four years. Horse populations are normally reduced to the minimum number of the AML range to avoid the need for frequent and costly gathering. Following minimum feasible management practices, all animals above the lower limit of the AML range are considered excess. Site-specific details of gathering, including trap location, are determined at the time of each gather. Excess animals removed from the range are made available to the public through the Wild Horse Adoption Program.

The fencing that exists in the HMAs for control of livestock movement serves to contain wild horses within the HMAs, but also creates barriers to wild horse movement when livestock are present and gates are closed. After the livestock are removed at the end of the grazing season, gates are left open to provide the opportunity for horse movement within the HMA. The absence of reliable year-round water, especially in drought years, is a limiting factor in some HMAs.

Mature horses are 14 to 16 hands tall (in common horse terminology one hand equals four inches) and weigh 950 to 1,250 pounds. Mature stallions are usually larger than mares. Wild horses in these HMAs exhibit saddle stock conformation, but each herd has its own unique characteristics. Two herds exhibit Spanish mustang characteristics, one herd has a large component of horses with pinto coloration, and the other herds display a variety of colors.

Dominant colors in the Alvord/Tule Spring herd are bay, black, brown, sorrel, palomino, and buckskin. Historically, many of these horses have appeared to be of thoroughbred ancestry with some evidence of draft blood. Major colors in the Heath Creek/Sheepshead herd are dun, black, brown, bay, sorrel, and an occasional paint. All are of saddle stock conformation.

Horses located in the Kiger and Riddle HMAs are often referred to as the “Kiger Mustangs”and are managed for their Spanish Mustang characteristics. They possess the physical color characteristic referred to as the “dun factor.” Most
Kigers are dun in color, but grulla, buckskin, red dun, and variations of these colors are common. Other characteristics include dorsal stripes on the back and zebra stripes on the knees and hocks.

The South Steens HMA horses exhibit saddle horse conformation, and the most common colors are pinto variations, sorrel, bay, and red roan. Black, gray, chestnut, brown, blue roan, palomino, and dun horses are also present. These horses are frequently viewed by the public from Highway 205 and the South Steens Loop road.

3.15 Grazing Management

The Taylor Grazing Act was passed on June 28, 1934 to protect public land resources from degradation and also to provide orderly use and improvement/development of public rangelands. Following various homestead acts, the Taylor Grazing
Act established a system for the allotment of grazing privileges to livestock operators based on grazing capacity and priority of use, and for the delineation of allotment boundaries. This act also established standards for rangeland improvements and implemented grazing fees. Approximately 142 million acres of land in the western United States were placed under the jurisdiction of the Grazing Service, which became the BLM in 1946. The FLPMA, passed in 1976, and the PRIA, passed in 1978, also provide authority for the management of livestock grazing on public lands.

Table 3.19: Herd Management Areas in the AMU and CMPA

HMA	BLM Total HMA Acres	BLM Acres in AMU	BLM Acres in CMPA	AML Range	Forage Allocation (AUMs [1])
Alvord/Tule Springs	343,201	343,201	0	73 to 140	1,680
Heath Creek/Sheepshead	62,427	54,599	7,828	61 to 102	408
Kiger	38,359	0	6,531	51 to 82	984
Riddle Mountain	28,346	0	25,328	33 to 56	672
South Steens	127,838	4,213	123,625	159 to 304	3,648
Total	**600,171**	**402,013**	**163,312**		**7,392**

[1]AUM - Animal Unit Months

3.15.1 Grazing Authorization

Livestock grazing is administered on 75 allotments in the Planning Area. Seven of those allotments are split, with portions being both inside and outside the Planning Area. Five of the seven split allotments are part of the Three Rivers Resource Area and were split during the legislation that formed the CMPA in 2000. The other two split allotments have pastures that extend across the state line into Nevada. Allotment boundaries are delineated on Map 3.1.

Thirty-four permittees are authorized to graze livestock on 1,535,498 allotted acres of public land in the Planning Area under the direction of Section 3 of the Taylor Grazing Act. Livestock are not authorized to graze on 97,995 acres of unallotted land because of resource conflicts or legislative actions. Currently, permittees are authorized to graze an estimated 98,504 AUMs permitted use within the Planning Area. The current use is estimated because of the seven allotments that are split with portions both inside and outside the Planning Area. Table 3.20 shows the acres, AUMs permitted use, wildlife allocation, seasons of use, management category, and other information for each allotment within the Planning Area.

Twenty-seven of the 75 allotments within the Planning Area are managed using AMPs. The remaining "I" and "M" allotments have grazing systems that satisfy natural resource objectives. Twenty-one allotments have been evaluated to assess the adequacy of the AMP or grazing system. Seventeen of the allotments in the Planning Area have been assessed as to whether they are in compliance with the S&Gs.

Recent land use plans have developed and implemented grazing systems primarily through AMPs and agreements with permittees. An AMP is a documented program that directs grazing management on specified public land toward reaching goals and objectives regarding resource conditions, sustained yield, multiple use, and ranch economics. AMPs are considered to be implemented when incorporated into term grazing permits or leases and when accepted by the permittee or lessee. The RMP/EIS will re-establish resource objectives, which all allotments must meet. Specific management prescriptions will still be made on an allotment or watershed basis. Appendix O contains information on the effects of intensity and season of grazing.

Temporary nonrenewable grazing use is periodically authorized to qualified applicants when additional forage is temporarily available and the use is consistent with multiple use objectives. This use is nearly always authorized on crested wheatgrass seedings because crested wheatgrass can become decadent when it is not grazed periodically. Temporary nonrenewable grazing use is currently being authorized periodically on seven allotments in the Planning Area.

3.15.2 Standards for Rangeland Health and Guidelines for Grazing Management (S&Gs)

The rangeland reform process of 1996 modified the grazing regulations identified in 43 CFR part 4100. A new regulation was developed and is currently being implemented throughout the BLM. The regulation, 43 CFR 4180, addresses the fundamentals of rangeland health. In August 1997, the S&Gs developed in consultation with the RAC, Provincial Advisory Committees, American Indians, and others, were approved by the Oregon State Director for Oregon and Washington. The S&Gs provide the basis for assessing rangeland conditions and trends.

Specific types of field indicators of rangeland health are identified for each standard. The quantitative thresholds for these indicators vary according to soil, climate, and landform, as stated in the standards. An interdisciplinary team, with

participation from permittees and other interested parties, conducts assessments to evaluate the standards according to field indicators. The five standards are as follows:

Standard 1: Watershed Function - Uplands
Upland soils exhibit infiltration and permeability rates, moisture storage and stability appropriate to soil, climate, and land form.

Standard 2: Watershed Function - Riparian/Wetland areas
Riparian/wetland areas are in properly functioning physical condition appropriate to soil, climate, and land form.

Standard 3: Ecological Processes
Healthy, productive, and diverse plant and animal populations and communities appropriate to soil, climate, and landform are supported by ecological processes of nutrient cycling, energy flow, and the hydrologic cycle.

Standard 4: Water Quality
Surface water and ground water quality influenced by agency actions complies with state water quality standards.

Standard 5: Native, Threatened and Endangered and Locally Important Species
Habitats support healthy, productive, and diverse populations and communities of native plants and animals (including special status species and species of local importance) appropriate to soil, climate, and landform.

Based on 43 CFR part 4180, in the event that livestock are detrimental to a resource standard, management will be implemented as soon as practicable to progress toward attaining the standard(s). This will occur no later than the start of the next grazing season.

Collection of monitoring data tracks progress in meeting identified management objectives. The monitoring data is used for periodic evaluations of management actions and active grazing authorizations in each allotment. To maintain or improve public land resources, adjustments are made by agreement or decision in accordance with legislation, regulations, and policy.

3.15.3 Allotment Categorization

Prior to the 1960s, grazing policy focused on allotment boundaries and seasons of use; however, in the mid-1960s, grazing systems were implemented, which considered the maintenance and establishment of plant communities. Grazing systems define the management approach needed for each allotment to protect and maintain plant community diversity and the resource values on public land. Livestock grazing allotments are categorized and managed according to the following three selective management categories:

Improve (I) category allotments are managed to improve current unsatisfactory resource conditions and will receive the highest priority for funding and management actions.

Maintain (M) category allotments are managed to maintain current satisfactory resource conditions and will be actively managed so that resource values do not decline.

Custodial (C) category allotments include a high percentage of private lands and are managed custodially while protecting existing resource values.

Within the Planning Area, there are 34 improve "I" category allotments, eight maintain "M" category allotments, and 33 custodial "C" category allotments.

3.15.4 Grazing Exclusions

The Steens Act altered the previous pattern of use through land exchanges and amendments to individual allotments, and created the first Congressionally designated No Livestock Grazing Area in the Steens Mountain Wilderness, covering 97,671 acres of public land. Portions of the No Livestock Grazing Area will continue to be grazed until the end of the 2003 grazing season. By the start of the 2004 grazing season, offsite forage will have been created to make up for the forage lost through legislation. Land exchanges, conducted to meet the mandates of the Steens Act, necessitated

Allot No.	Allotment Name	M[1] I C	Total Public Land Acres	Total Other Acres	% of Allot. in Planning Area	Public Land Acres in CMPA	Public Land Acres in AMU	AUM Allocation Antelope	AUM Allocation Deer	AUM Allocation Elk	AUM Allocation Wild Horses	AUM Allocation Livestock	AUMs SNU[2]	Period of Use[3]	Grazing System[4]	Mgt Objective[5]
6021	Pueblo Mountain	I	8,177	611	100	-	8,177	1	28	-	-	323	-	sp,su,f	rr	1,2,3,4
6022	Kings River	I	1,771	-	100	-	1,771	-	10	-	-	113	-	su,f	rr	1,2,3,4
6023	Hammond	I	11,009	2,712	100	2,839	8,170	6	33	-	-	473	-	sp,su,f	e,rr,d	1,3,4
6024	South Fork	M	381	138	100	-	381	-	1	-	-	40	-	sp	e	1,2,3,4
6025	Hardie Summer	M	2,405	3,719	100	2,405	-	1	332	10	-	408	-	su,f	d	1,2,3,4
6026	Mann Lake	I	35,363	1,460	100	10,433	24,930	6	110	15	-	3,670	-	sp,w	r,w	1,2,3,4
6027	Carlson Creek	I	8,876	4,017	100	8,876	-	2	29	-	-	684	-	sp,su,f	r	1,2,3,4
6028	Fields	I	4,837	192	100	-	4,837	-	5	-	-	210	-	sp,su	e,d,r	3,4
6029	Keg Springs	I	40,661	503	100	-	40,661	-	13	-	-	1,791	-	sp,su,f	s	3,4
6030	Reicken's Corner	M	8,841	999	100	-	8,841	4	3	-	-	688	-	sp,su,f	e,d,r	3,4
6031	LaVoy Tables	I	38,257	1,708	100	3,280	34,977	7	136	-	-	1,653	-	sp,su,f	e,d,r	3,4
6032	Krumbo Mountain	I	17,353	6	100	16,800	553	4	43	30	-	1,059	-	su,f	rr	3,4
6033	Chimney	I	14,769	10,125	100	10,190	4,579	6	149	38	-	2,015	-	sp,su,f	s	1,2,3,4
6035	Fields Basin	I	30,968	1,773	100	-	30,968	7	49	-	-	3,325	-	sp,su,f	rr	3,4
6037	Bridge Creek	I	3,603	56	100	3,603	-	-	8	32	-	459	-	su,f	d	3,4
6038	Alvord Peak	I	24,354	709	100	21,719	2,635	-	28	-	-	2,328	-	sp,f	e,d	1,2,3,4
6040	Stonehouse	I	10,517	321	100	10,517	-	3	39	17	-	1,772	-	su	d	1,2,3,4
6041	South Catlow	I	42,351	19,817	100	-	42,351	26	2	-	-	2,069	-	w	d	3,4
6042	Basque Hills	I	39,449	-	100	-	39,449	5	2	-	-	900	-	sp	e	3,4
6043	Pueblo Slough	I	9,768	7	100	-	9,768	2	2	-	-	1,400	-	w	d	3,4
6044	Lower Antelope	I	5,867	19	100	-	5,867	1	1	-	-	500	-	w	d	3,4
6100	Hammond FFR	C	1,158	6,158	100	799	359	-	-	-	-	32	-	n	s	4
6101	Waldkirch FFR	C	27	324	100	-	27	-	-	-	-	12	-	n	s	4
6102	Oregon End FFR	C	1,656	841	100	-	1,656	-	-	-	-	138	-	n	s	4
6103	Wiley FFR	C	29	1,145	100	-	29	-	-	-	-	6	-	n	s	4

Allot No.	Allotment Name	MIC[1]	Total Public Land Acres	Total Other Acres	% of Allot. in Planning Area	Public Land Acres in CMPA	Public Land Acres in AMU	AUM Allocation Antelope	AUM Allocation Deer	AUM Allocation Elk	AUM Allocation Wild Horses	AUM Allocation Livestock	AUMs SNU[2]	Period of Use[3]	Grazing System[4]	Mgt Objective[5]
6104	Defenbaugh FFR	C	1,276	2,655	100	-	1,276	-	-	-	-	60	-	n	s	4
6105	Wrench Ranch FFR	C	411	4,514	100	-	411	-	-	-	-	51	-	n	s	4
6106	Orlando FFR	C	1,823	6,605	100	-	1,823	-	-	-	-	320	-	n	s	4
6107	Crump/ Calderwood FFR	C	231	1,399	100	-	231	-	-	-	-	12	-	n	s	4
6108	Henricks FFR	C	131	870	100	-	131	-	1	-	-	30	-	n	s	4
6109	Casey FFR	C	376	243	100	-	376	-	-	-	-	21	-	n	s	4
6110	Still FFR	C	321	2,975	100	-	321	-	-	-	-	68	-	n	s	4
6111	Dunbar FFR	C	536	2,010	100	-	536	-	-	-	-	68	-	n	s	4
6112	Long Hollow FFR	C	836	828	100	-	836	-	-	-	-	103	-	n	s	4
6114	Rock Creek FFR	C	1,260	9,550	100	-	1,260	-	-	-	-	148	-	n	s	4
6115	Dixon FFR	C	96	1,145	100	-	96	-	-	-	-	22	-	n	s	4
6116	Northrop FFR	C	613	1,985	100	-	613	-	-	-	-	40	-	n	s	4
6117	Kaser FFR	C	40	1,578	100	-	40	-	-	-	-	5	-	n	s	4
6118	Lupher FFR	C	79	131	100	-	79	-	-	-	-	21	-	n	s	4
6119	Pollock FFR	C	994	5,128	100	677	317	-	-	-	-	19	-	n	s	4
6120	Mann Lake FFR	C	1,629	26,456	100	1,511	118	-	-	10	-	22	-	n	s	4
6121	Neuschwander FFR	C	640	1,370	100	-	640	-	-	-	-	43	-	n	s	4
6122	Starr FFR	C	194	584	100	-	194	-	-	-	-	9	-	n	s	4
6123	Culp FFR	C	183	3,591	100	-	183	-	-	-	-	-	-	n	s	4
6124	Windmill FFR	C	222	619	100	-	222	-	-	-	-	15	-	n	s	4
6125	Roaring Springs FFR	C	6,400	196,332	100	4,909	1,491	-	24	-	-	374	-	n	s	4
6126	CM Otley FFR	C	907	13,173	100	897	10	-	-	-	-	151	-	n	s	4
6127	Kuney FFR	C	513	11,206	100	-	513	-	-	-	-	35	-	n	s	4

Allot No.	Allotment Name	M[1] I C	Total Public Land Acres	Total Other Acres	% of Allot. in Planning Area	Public Land Acres in CMPA	Public Land Acres in AMU	AUM Allocation Antelope	AUM Allocation Deer	AUM Allocation Elk	AUM Allocation Wild Horses	AUM Allocation Livestock	AUMs SNU[2]	Period of Use[3]	Grazing System[4]	Mgt Objective[5]
6128	Konek FFR	C	80	285	100	-	80	-	-	-	-	10	-	n	s	4
6129	Alvord FFR	C	299	17,978	100	-	299	-	-	-	-	-	-	n	s	4
6130	Scharff FFR	C	276	4,800	100	276	-	-	-	-	-	68	-	n	s	4
6131	South Pocket FFR	C	145	1	100	-	145	-	-	-	-	1	-	n	s	4
6133	Otley Brothers FFR	C	313	8,682	100	225	88	-	-	-	-	21	-	n	s	4
Totals			1,593,775	478,891		329,927	1,205,571	300	3,961	790	8,208	98,504	2,474			

[1] M=Maintain, I=Improve, C=Custodial
[2] SNU=Suspended Nonuse
[3] Periods of Use: sp=spring, su=summer, f=fall, w=winter, n=no particular season
[4] Grazing Systems: rr=rest rotation, s=seasonal, d=deferred, r=rotational, e=early
[5] Management Objectives:
1=Improve and/or maintain riparian vegetation
2=Improve water quality and quantity
3=Maintain and/or improve wildlife habitat
4=Maintain and/or improve ecosite condition
[6] Acres shown are for the whole allotment. Only a portion of the allotment is within the Planning Area.

allotment boundary changes, combining portions of allotments, creating a new allotment, revisions to permitted use, and several new rangeland improvement projects.

Additional areas within livestock grazing allotments are excluded from grazing as determined in prior decisions and agreements between the BLM and permittees. Exclusionary measures are utilized to protect resource values and facilities. The types of resources and facilities protected by the exclusion of livestock grazing include the following: riparian vegetation communities; reservoirs, springs and wetlands; developed water sources; special status plant or animal habitats; relevant and important values for which ACECs are designated; ORVs for which WSRs were designated; wilderness values; research and study plots; administrative sites; recreation sites; and archaeological sites.

3.15.5 Ecological Status

ESI data describe the ecological status of vegetative communities based on soil characteristics and potential natural vegetative communities. ESI data from approximately 1984 to 1989 are provided for the Planning Area. The ecological status of the rangelands in the Planning Area is summarized in Table 3.21. These data are the same as when completed nearly 20 years ago and do not depict changes since then. Trend studies have shown that the ecological status of many vegetative communities has advanced to a higher seral status.

Within allotments containing riparian habitat and water quality values, improved grazing management is a priority for the Planning Area. To date, allotments with important riparian resource values and updated management plans have shown improvement in ecological status and trend.

3.15.6 Rangeland Improvements

In order to effectively manage livestock distribution and protect rangeland, range improvements have been constructed within the planning area. Within the CMPA there is a total of 18,900 acres of crested wheatgrass seeding, 330 miles of fence, 25 cattleguards, 242 reservoirs or waterholes, 23 spring developments, six wells, and 29 miles of pipelines. Within the AMU there is a total of 22,350 acres of crested wheatgrass seeding, 634 miles of fence, 50 cattleguards, 286 reservoirs or waterholes, 69 spring developments, 63 wells, and 104 miles of pipelines. As mandated in the FLPMA and the PRIA, a portion of grazing fees is to be used on range improvements for the benefit of wildlife, watersheds, and livestock grazing. Emergency fire rehabilitation funds have also been expended to protect resource values by converting exotic annual vegetative community types back to native, perennial plant communities to improve plant community and watershed health. Livestock operators, state and federal agencies, and other interested groups have also continued to fund construction of rangeland improvement projects.

Range improvements planned prior to legislation, which have completed NEPA documentation and are in conformance with the Steens Act, may still be implemented within the CMPA. New range improvements, necessary to fully implement the No Livestock Grazing Area and other legislated grazing changes, may be constructed following NEPA analysis. Additional range improvements will be coordinated through the SMAC.

Maintenance and reconstruction of existing support facilities in the Steens Mountain Wilderness and WSAs will be in accordance with existing guidelines for wilderness, WSAs, NEPA, and the Steens Act. Maintenance, reconstruction, and construction of new support facilities in wilderness areas where grazing is allowed, as well as access for these and other purposes, will be in compliance with the Wilderness Act and House Report 101-405 (Arizona Desert Wilderness Act) grazing guidelines. In WSAs, maintenance, reconstruction, new construction, and access to livestock facilities will be in compliance with the WSA IMP.

Table 3.21: Ecological Status of Rangelands in the Planning Area

Ecological Status	AMU Acreage	CMPA Acreage	Total Acreage	Percentage of Total
PNC	15,183	17,629	32,812	2.0
High Seral	276,577	129,210	405,787	24.6
Mixed High/Mid Seral	163,604	76,831	240,435	14.6

Mixed High/Early Seral	20,338	1,540	21,878	1.3
Mid Seral	585,369	161,371	746,740	45.3
Mixed Mid/Early Seral	37,042	7,571	44,613	2.7
Early Seral	66,722	9,487	76,209	4.6
Rock	2,284	20,791	23,075	1.4
No Data	54,192	4,083	58,275	3.5
TOTAL	**1,221,311**	**428,513**	**1,649,824**	**100.0**

3.16 Wildland Fire Management

Fire has played an important role in the development of most plant communities in the Planning Area. The role that fire plays depends on the severity, intensity, and frequency of burning as well as elevation and precipitation. Fire changes plant community structure and species composition, and alters site nutrient dynamics. The Planning Area has a wide variety of plant communities with varied fire histories, and averages about 15 wildland fires per year. Approximately 90 percent of the fires are caused by lightning and about ten percent are caused by humans. Over the last ten years, approximately 24 fires burned 5,300 acres each year. A large percentage of these fires are less than ten acres in size.

3.16.1 Fire Ecology of Major Vegetation Types in the Planning Area

Sagebrush is the dominant vegetation type throughout the Planning Area. Big sagebrush (all three sub-species), low sagebrush, and silver sagebrush are the most common species found. Black sagebrush and stiff sagebrush may also be found in specialized habitats in the Planning Area. Silver sagebrush is the only sagebrush species found in the Planning Area that will sprout following top removal. Other sagebrush species will recolonize areas by seed, either from the seed bank or by emigration from unburned areas. This process may be slow in larger burned areas because of the way sagebrush seed disperses. Sagebrush seeds are extremely small and have no specialized dispersal mechanism. Seeds rarely move more than three feet from parent plant. Size and shape of burned areas become important under these conditions. Burned areas with irregular boundaries will facilitate sagebrush establishment, while large burned areas with little sinuosity to the perimeter must rely on the soil seed bank and seed transport.

Sagebrush fire return intervals (number of years between fire events) are difficult to determine because the plants are typically entirely consumed by fire and do not leave evidence that can be used to determine historical fire regimes. Until recently, the extent and dates of fires have not been recorded and post-fire succession has not been studied in detail. However, site productivity affects the fire behavior and frequency in these sagebrush stands. Sites with higher productivity (more grass and forb understory) will carry fire more easily and more frequently than sites with low productivity. However, low sagebrush can be found in areas with higher productivity. Rooting depth in these areas is often limited by a heavy clay layer and not bedrock. Low sagebrush is usually found on less productive sites compared to mountain, basin, or Wyoming big sagebrush. Silver sagebrush, however, may also be associated with wetland species in areas of high productivity where fire history is more likely to be related to adjacent vegetation than to characteristics of the silver sagebrush plant communities themselves. Silver sagebrush is also found in a mosaic of vegetation types; it does not occupy large areas within the Planning Area.

Juniper woodlands are the most widely distributed woodland type in the Planning Area. Ancient western juniper stands are located in rocky areas where fire return intervals are more than 150 years. The location of these stands provides insufficient understory vegetation to carry fire. If fires did occur, they were often limited to one or two trees and areas of less than one acre. Under certain circumstances, large fires did move across these stands, but such events were rare. The mountain big sagebrush fire regime, where much juniper has encroached today, typically burned every 15 to 25 years (Miller and Rose 1998), a return interval similar to other shrub communities in the arid West. Young western junipers have thin bark and are readily killed by surface fires. Fire will carry through juniper stands with grass and shrub understory. As trees mature, they displace shrub and grass vegetation, leaving little surface vegetation. The stand then becomes more susceptible to erosion due to reduction in near-surface root systems of the lower stature plants. Older stands become resistant to fire because low productivity limits available fuel. Western juniper does not sprout after fire; reestablishment is from seed dispersed by water and animals, and the trees may be slow to regenerate.

Cheatgrass is an invasive nonnative annual grass that creates a fire hazard in limited parts of the Planning Area. Cheatgrass thrives in disturbed environments, especially with fine-textured soils. Over-grazing and/or wildland fires provide conditions that are more favorable for cheatgrass than for native species. Cheatgrass often out-competes native grasses, forbs, and shrubs in disturbed areas, leaving large expanses dominated by it, or by cheatgrass combined with other nonnative species. Cheatgrass dominated areas tend to burn more frequently compared with the native shrublands and grasslands, diminishing the occurrence of associated woody plants. Increases of cheatgrass have also altered the phonological calendar of the plant communities. Cheatgrass begins and completes growth earlier than the associated native vegetation. Areas dominated by cheatgrass now have the potential to burn earlier in the year than plant communities dominated by native vegetation. Earlier fires, especially if repeated every three to seven years, burn native plants when they are actively growing and most susceptible to injury. Fire does not increase cheatgrass production, but it does eliminate other plants and provides an opportunity for cheatgrass to increase at the expense of native grasses, forbs, and shrubs. Cheatgrass invasion substantially reduces biodiversity and the land's value for livestock forage and wildlife habitat. Reversal of this ecological cycle probably requires human intervention and/or alteration of current land management.

Crested wheatgrass is an introduced perennial grass that was planted to revegetate disturbed or burned sites. It is valuable for forage and soil stabilization and if planted in areas formerly dominated by shrubs, the fire regime may be altered.

3.16.2 Fire Management Needs, Status, and Alternatives

The Planning Area fire management strategy focuses on wildland fire suppression and prescribed fire. The wildland fire season generally runs from mid-May through mid-September, while prescribed fires are usually planned for periods before and after the wildland fire season, depending on weather conditions. Prescribed burning can be used to meet resource and fire management objectives such as stimulation of plant growth, changes in species composition, or reduction in amounts of fuels and slash. Generalized policy and procedures for fire planning, assessment, and response are guided by BLM Manual 9102.

3.16.2.1 Juniper Management

Encroachment of western juniper into mountain big sagebrush and quaking aspen plant communities is a major concern across large areas of the Planning Area. Historically, western juniper was limited to rocky ridge tops and shallow soil areas where fires rarely occurred. Past livestock management and fire suppression have reduced the influence of fire in these areas. Subtle shifts in climate may have also helped Western juniper expand its range over the last 100 years. As western juniper density and cover increase, diversity of habitats decreases and potential conflicts over the remaining resources rise.

In addition to prescribed burning, chain saws have also been used to remove western juniper from quaking aspen stands prior to burning, and after burning if the fire did not carry through the stands. Cutting of western juniper helps to reduce competition and the disturbance stimulates suckering, or root-sprouting, of the quaking aspen. Stands that were burned or cut have been temporarily fenced from deer, elk, and domestic livestock, allowing quaking aspen suckers to grow above the reach of large domestic or wild herbivores.

3.16.2.2 Rangeland Condition

In lower elevation sagebrush plant communities, factors such as fuel conditions, proximity to sensitive habitats or presence of introduced annuals may make prescribed fire impractical. In these areas, the Burns DO is using a technique known as "brush beating" in which a large mower kills large sagebrush, but leaves smaller shrubs and herbaceous plants relatively unharmed. Cutting the brush in irregular shapes is another way to create a complex pattern or mosaic. The brush beating also interrupts the structure and continuity of the fuels, reducing the potential for large fires by limiting spread.

3.16.3 Prescribed Fires

Prescribed burns in 2001/2002 included V Lake (South Steens), Stonehouse (Northeast Steens) and East Ridge/Mid Kiger Gorge (North Steens). The current prescribed fire program on the Planning Area has successfully reintroduced fire to sagebrush and aspen plant communities. These management actions are improving habitat for numerous wildlife species and are providing higher quality forage for domestic and wild herbivores.

3.16.4 Wildland Fires

Wildland fire risk depends on the intensity and size of the wildland fire as well as the location, time of season, and time of day. Historically these ecosystems experienced a variety of fire severities and intensities. The variety of intensities and severities was controlled by changing climatic conditions across the season. Early and late in the wildland fire season, conditions were cooler and potentially wetter than during the hot dry summer months. Fires that burned at these times may have had fewer impacts than those that burned in the middle of the hot dry summer. Conditions also changed within a single day. Severity and intensity can be much higher during the middle of the burning period than during night when temperatures are lower and relative humidity is higher. However, conditions today have changed somewhat. The amount of woody vegetation across the Planning Area is greater today than 100 years ago. Increases in western juniper and sagebrush density and cover have altered the characteristics of most wildland fires. Fires today are larger in most cases than they were historically due to a simplification of the vegetation (fuels) structure. Large, catastrophic wildfires are much more common today than 100 years ago. These fires are occurring at an increasing rate across the western United States. Impacts to plants and animals can be dramatic following these large fires. Large grazing animals, domestic and wild, may be displaced for several years following large fires. Wildlife species that depend on sagebrush for part or all of their entire life cycle will decline following burning. Severely burned landscapes lose soil, seed bank, and microflora; consequently, they are more susceptible to invasions of weedy species. Fire may also have adverse effects on recreational and visual resources. The impacts of burning on plant community processes and functions can be naturally mitigated, but social values often require rehabilitation actions be taken to assist recovery.

In case of multiple fires, suppression priority is given in decreasing order of importance to fires threatening life, property, and resources. Fires occurring within wilderness and WSAs and other environmentally sensitive areas have received full suppression responses, but these responses are generally limited, regarding the use of mechanical equipment and retardant. If a fire is likely to become large or to threaten life or property, the line officer can approve the use of mechanical equipment to assist in suppression. In that case, immediate rehabilitation occurs on all areas of ground disturbance.

Current fire management for the CMPA is outlined in the WSA IMP and considers the provisions of the Steens Act as well as the Wilderness Act. On all lands other than WSAs or designated wilderness within the CMPA, the WSA IMP states that current fire management practices will continue, subject to provisions in the Steens Act. Within the Steens Mountain Wilderness, fire suppression will take place in accordance with the provisions of the Wilderness Act, Management of Designated Wilderness Manual 8560, and the Steens Act. Pursuant to 8560 §.35A, all wildland fires will be suppressed until an approved Fire Management Plan (FMP) is prepared. Suppression actions in the Steens Mountain Wilderness will be executed to minimize surface disturbance and alterations of the natural landscape as well as fire suppression costs, while being consistent with management objectives and constraints. Methods and equipment will be used which least alter the landscape or disturb the land surface. Suppression structures and improvements will be located outside the Steens Mountain Wilderness, except those that are the minimum necessary to protect life, property, public welfare, and Steens Mountain Wilderness objectives.

Suppression preplanning will be conducted with review by an interdisciplinary team to determine appropriate response and equipment to be used in fire suppression. Protection of the Steens Mountain Wilderness resource will be made part of the suppression objectives for all fires. Tactics will utilize the minimum tool concept to achieve these objectives. Non-mechanized equipment will be used unless mechanized equipment is approved by the District Manager. Suppression work will be conducted to minimize ground disturbance and vegetation cutting while safely meeting objectives. Mop-up methods that minimize disturbance will be preferred.

Fire management within the WSAs will continue in accordance with the provisions of the WSA IMP. Until an approved FMP is prepared, all wildland fires will be suppressed.

Response to fire incidents that escape initial attack, have the potential to escape initial attack, or occur in sensitive areas, will utilize one or more resource advisor(s) to assist in planning and implementation of suppression activities. These advisors assist the incident commander with suppression decisions concerning resource values and priorities. These individuals know the resources and the landscape near the fire and have a working relationship with local landowners. Although resource advisors do not make suppression decisions, their advice and concerns have a direct bearing on most major suppression decisions.

3.17 Lands and Realty

The approximate percentages of surface area administration/ownership within the Planning Area are as follows: BLM-76.0 percent, USFWS - 1.0 percent, State of Oregon (Division of State Lands, ODFW) - 0.3 percent, and privately owned - 22.7 percent (Table 3.22). All the private land in the Planning Area is zoned by Harney County for exclusive farm and range use (EFRU-1) except the areas at Frenchglen and Fields, Oregon, which are zoned rural service center. The primary use of the private land is cattle ranching and grazing. Other uses include recreation, hunting, small business, and agriculture, with native hay as the primary crop.

3.17.1 Administrative Sites

BLM administrative sites in the Planning Area are the Frenchglen Fire Guard Station, and Fields Administrative Site. In addition, a nonhistorical building at the Riddle Brothers Ranch is utilized as an administrative facility to house employees working in the area.

Table 3.22: Land Ownership and Administration in the Planning Area

Land Ownership/Administration	AMU Acres	CMPA Acres	Total
BLM	1,221,314	428,156	1,649,470
U.S. Fish and Wildlife	26,422	0	26,422
Private (including county)	427,363	66,910	494,273
State of Oregon	6,576	1,070	7,646
Total	**1,681,675**	**496,136**	**2,177,811**

3.17.2 Land Retention, Acquisition, and Disposal

BLM administered lands are divided into three zones that identify the public land for potential land tenure adjustments (e.g., acquisition or disposal), consistent with existing regulations and BLM policy. The FLPMA Section 102.(a)(1) provides that "...the public lands be retained in federal ownership unless as a result of the land use planning procedure provided for in this Act, it is determined that disposal of a particular parcel will service the national interest..." Zone 1 lands have been identified for retention in public ownership. These are also areas where emphasis will be placed on acquisition of land containing high public resource values. Zone 2 lands have been identified for limited retention and consolidation of ownership. Zone 3 lands generally have lower resource value and have been determined difficult and uneconomic to manage and may be identified for disposal. Methods for implementing land disposal actions include the following: (a) BLM and other federal jurisdictional transfers; (b) transfers to state and local agencies (e.g., R&PP patents, in-lieu selections, airport patents); (c) state exchanges; (d) private exchanges; (e) sales; (f) Indian allotments; and (g) desert land entries. Current GIS data show approximately 1,533,505 acres designated as Zone 1, 108,219 acres designated Zone 2, and 7,744 acres designated Zone 3 within the Planning Area. Land management requirements in the Steens Act such as land exchanges and WSA boundary adjustments create inconsistencies between the current land tenure designations and legislative requirements. These inconsistencies will be addressed through the RMP/EIS by adjusting land tenure zones to provide consistency with the Steens Act. Upon approval of the plan, the new zones and management actions will constitute a revised land tenure plan. Map 2.4 depicts the Land Tenure Zones for the Planning Area.

One specific purpose of the Steens Act (Section 1(b)(4)) was to "provide for the acquisition of private lands through exchange for inclusion in the Steens Mountain Wilderness and the [CMPA]." In order to do this, a number of specific land exchanges were outlined in the Steens Act and carried out by the BLM. Lands acquired within the CMPA became part of the CMPA and are managed under its laws and management plans. Lands acquired in the Steens Mountain Wilderness and WSAs came under those designations and are managed as such. The Steens Act also allows for additional future acquisitions of private lands in the CMPA, the Steens Mountain Wilderness, and the WSAs, which will be classified and managed accordingly.

3.17.3 Withdrawal Areas

The Mineral Withdrawal Area designated by the Steens Act encompasses the entire CMPA and Steens Mountain Wilderness. Subject to valid existing rights, no mining or exploration will be permitted anywhere in the CMPA. Exceptions are the existing gravel operations within the CMPA, which are permitted by the Steens Act as follows: Section 401(b) of the Steens Act "... The Secretary may permit the development of salable mineral resources, for road maintenance only, in those locations identified ... as an existing 'gravel pit' within the mineral withdrawal boundaries (excluding the Steens Mountain Wilderness, WSAs, and designated segments of the National Wild and Scenic River System) where such development was authorized before the date of enactment of this Act."

Section 113(g) of the Steens Act also withdraws all lands within the CMPA from all forms of entry except "land exchanges that further the purposes and objectives specified in Section 102" of the Steens Act. WSRs and the Steens Mountain Wilderness also carry with them their own withdrawals made under the terms of the Wilderness Act and the WSR Act. For these reasons the CMPA, depending upon the location, may have a variety of overlapping duplicate withdrawals.

3.17.4 Access

Many roads or segments of roads crossing private lands in the Planning Area have no provision for legal public access. Together with the access restrictions provided in the Steens Act, this situation may severely limit legal public access to large portions of public land within the Planning Area. Over time, the BLM has acquired public access easements on a few major roads such as the Steens Loop, the Trout Creek Loop Road and a few other isolated locations. More recently, land exchanges authorized by the Steens Act have secured public access easements on several private road segments.

Some roads may be "public ways" established through prescription under state law where unobstructed public use over time may have created a public easement across private lands. The BLM has no jurisdiction over these road segments nor does it generally attempt to assert these rights to provide the public access.

As discussed in previous sections, the Steens Act specifies that "reasonable access" will be provided to private and state landholdings within the boundaries of the CMPA and the Steens Mountain Wilderness. Creating the CMPA and implementing the wilderness regulations have raised access issues to the forefront of management planning. The Steens Act and the WSA IMP guide access and use of the roads/transportation. In addition, the Transportation Plan, as well as the RMP/EIS Section 3.18, address the issue of access and outline specific protocols and objectives.

3.17.5 Rights-of-Way and Land Use Authorization

Although the Steens Act does not specifically prohibit grants of new ROWs or land use authorizations, many of its provisions would limit the number and type of grants. An example is the Steens Act's prohibition of road construction and facilities. Valid existing rights are protected under the Steens Act. Regarding ROWs, the Steens Act specifically states "nothing in this Act shall have the effect of terminating any valid existing ROW on public lands included in the Cooperative Management and Protection Area."

Existing ROWs within the CMPA are primarily limited to small scale-electric and telephone distribution lines. Access roads across public lands to private lands generally have no recorded rights associated with them. Use of these roads by landowners and others is considered "casual use" where no authorization is needed as long as such use does not cause appreciable disturbance to the public lands, its resources, or improvements. No well maintained county roads or state or federal highways are within the CMPA, although these roads and highways comprise large portions of the CMPA boundary. Likewise, there are no designated ROW corridors within the CMPA.

In the remainder of the Planning Area, ROWs have been granted for small scale overhead electric distribution lines and buried telephone lines to individual ranches, rural residences and small communities. Harney Electric Cooperative and CenturyTel operate most of these facilities.

Harney County has their primary county roads authorized by FLPMA ROWs. The remainder are presumed to be authorized by ROWs under the provisions of RS2477. The County has never asserted nor the United States formally acknowledged such rights. Otherwise there are few documented ROWs for access roads across public lands in the AMU.

There are a few ROWs existing in the Planning Area for water facilities such as ditches, canals, diversions, and reservoirs. Most of these were granted under pre-FLPMA authorities. Some of these types of irrigation ROWs such as those granted under the authority of RS2339 and RS2340 (Act of July 26, 1866) required no explicit approval by the United States for the ROW to exist and thus are not documented or recorded. The facility had only to be constructed and water right held under state law prior to the enactment of the FLPMA in 1976 for a grant to occur.

The Andrews MFP designated several corridors in the Planning Area outside the CMPA. These corridors are associated with power transmission lines operated by Harney Electric Cooperative, and major county roads. In addition, a designated corridor exists along a route of a 500kV power transmission line proposed by Pacific Power & Light during the early 1980s east-west through the south central portion of the Planning Area. The 500kV line was ultimately constructed along an alternate route through the Three Rivers RA, so no facilities exist along the designated corridor except where Harney Electric's line follows the corridor through Long Hollow and a portion of the Alvord Desert.

There is no commercial wind, solar, or other renewable energy development within the Planning Area and no known proposals for this type of development. Additional discussion concerning renewable energy potentials and development in the planning area can be found in part 3.13.1 - Energy Resources.

Film permits and wilderness access permits under 43 CFR 2920 are the primary type of land use authorizations that have been granted or might potentially be proposed. There are no agricultural or occupancy permits or leases in effect in the Planning Area.

Except for overflight areas there has been no military activity in the Planning Area in recent history and no known proposals for such activity. The BLM currently has no authority to regulate military overflight but may cooperate and coordinate with the Federal Aviation Administration and the military on this type of activity.

3.18 Transportation and Roads

The Planning Area has private, state, county, and BLM roads. Some roads are maintained to a high standard while others are primitive two track routes receiving very little maintenance. Road uses include rancher access for livestock management, access to private lands, the general public seeking recreational opportunities, and agency administration. Many of the roads serve as important access routes to public lands.

Priorities for maintenance in the Planning Area are established as follows: 1) safety of users, 2) high-use roads, 3) resource protection, and 4) all other roads. Road construction has been limited to upgrading segments of existing routes to improve access or alleviate maintenance or environmental problems. Section 112(d) of the Steens Act states that new road construction is only permissible if the BLM finds it necessary for public safety or protection of the environment.

Section112 of the Steens Act calls for a comprehensive Transportation Plan as part of this RMP/EIS. The Transportation Plan outlines the BLM's philosophy toward transportation management and provides specific guidelines for management of individual roads, as well as general standards for construction, maintenance, and access for the CMPA. The portion of the Planning Area outside the CMPA will continue to be managed under currently established transportation guidelines. OHV use and direction relates closely to the Transportation Plan and is discussed in the following section of this document.

In 2000, as part of the Steens Act, Congress closed the Steens Mountain Wilderness to motorized or mechanized vehicles, mechanical transport, motorized equipment, and the landing of aircraft. Certain roads within the CMPA are bounded by wilderness on both sides but are not actually part of the wilderness. These roads include the Steens Loop Road, Cold Springs Road, Newton Cabin Road to Big Indian Creek, Fish Creek Road, portions of the Bone Creek Road, and Three Springs Road. Roads that border the wilderness have specified setbacks from their centerlines, consistent with BLM wilderness policy. High standard roads such as HWY 205, East Steens Road and Catlow Valley Road have a 300-foot setback. The portions of the Steens Loop Road that border the wilderness have a 100-foot setback, while all other roads have a 30-foot setback. Additionally, most of the Steens Loop Road is closed during the winter except by winter recreation permit over a portion of the north segment.

All motorized and mechanized vehicle travel within the CMPA is prohibited off road and is limited to the routes specifically designated for their use as part of this management plan. Exceptions to the off road prohibition include emergencies, BLM administration, construction or maintenance of agricultural facilities, fish and wildlife management, or ecological restoration projects. All off road motorized or mechanized use on public lands within the CMPA must be authorized by the BLM.

Future management of the roads and ways within the CMPA is described in Chapter 2 of this document. Map 3.2 shows the existing roads and ways within the Planning Area as well as current maintenance levels within the CMPA. Map 2.8 more specifically shows the routes within the CMPA and includes the Service/Permit routes and Private Access Routes used by the livestock operators and private land inholders. Public access easements are also depicted on both maps.

3.19 Off-Highway Vehicles

OHV (motorized vehicle) use is frequently associated with hunting, fishing, and driving for pleasure and also occurs for administrative purposes such as management of livestock and maintenance of range projects. All public land in the Planning Area is designated as open, limited, or closed with regard to vehicle use. In an open area, all types of motorized and mechanized vehicle use are permitted at all times. In a limited area, motorized and mechanized vehicle use is restricted at certain times, in certain areas, to designated routes, to existing routes, to certain vehicular uses, or seasonally. In a closed area, motorized and mechanized vehicle use is prohibited. The BLM designates areas as "open" for intensive OHV and mechanized vehicle use where no compelling resource protection needs, user conflicts, or public safety issues exist to warrant limiting cross-country travel. The BLM designates areas as "limited" where it must restrict OHV and mechanized vehicle use in order to meet specific resource management objectives. Areas are designated as "closed" if closure to all motorized and mechanized vehicular use is necessary to protect resources, promote visitor safety, or reduce use conflicts. WSAs are designated as limited, while wilderness areas are closed to OHV and mechanized vehicle use. There are currently 675, 918 acres open, 680,017 acres limited to designated routes, 123,460 limited to existing routes, and 170,076 acres closed to OHV and mechanized vehicle use in the entire Planning Area. Management of OHV activities in the AMU is guided by the Andrews MFP, which states the various protection goals of each designation.

OHV designations for the CMPA only are 170,076 acres closed and 258,080 acres limited to designated roads. OHV use in the CMPA is addressed in Section 112(b) of the Steens Act:

> (1) PROHIBITION. – The use of motorized or mechanized vehicles on federal lands included in the Cooperative Management and Protection Area –
>
> > (A) is prohibited off road; and
> >
> > (B) is limited to such roads and trails as may be designed for their use as part of the management plan.
>
> (2) EXCEPTIONS. – Paragraph (1) does not prohibit the use of motorized or mechanized vehicles on federal lands included in the Cooperative Management and Protection Area if the Secretary determines that such use -–
>
> > (A) is needed for administrative purposes or to respond to an emergency; or
> >
> > (B) is appropriate for the construction or maintenance of agricultural facilities, fish and wildlife management, or ecological restoration projects, except in areas designated as wilderness or managed under the provisions of section 603(c) of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1782).Recreation

Federal agencies including the BLM, USFS, and USFWS, administer over 51 percent of the lands in Oregon and 70 percent of the lands in southeast Oregon (Harney, Malheur and Lake Counties), making them the largest managers of outdoor recreation and land facilities in the state (Oregon Parks and Recreation 2000). Therefore, these agencies play a major role in providing dispersed recreation opportunities as well as resource protection of some of the state's most unique and important scenic, natural, and cultural resources.

Sightseeing, driving for pleasure, fishing, and hunting are among the most popular types of dispersed recreation, according to the Southeast Oregon Recreation Plan for Harney, Lake and Malheur Counties. Nonmotorized boating, horseback riding, camping, hiking, wildlife viewing, and OHV use are also popular activities in the Planning Area. From October 2000 through September 2001, the Planning Area had 259,797 visitor days, up from 247,002 the previous year. Specific activities such as hunting, hiking, and camping as well as sites visited are discussed below.

Some of the recreation management objectives for the AMU are outlined in the Andrews MFP as follows:

- Encourage a wide range of recreation activities in addition to hunting and fishing;

- Cooperate with development of High Desert Trail;
- Limit vehicle use in campgrounds to ingress and egress;
- Provide quality recreational opportunities for the public; and
- Protect, preserve, and enhance recreational resources and provide facilities, information, and services to promote safety and a maximum recreational experience.

3.19.1 Recreation Activities

The Planning Area includes all or portions of the Beaty Butte, Juniper, Steens Mountain, and Whitehorse ODFW hunt units. Deer, antelope, bighorn sheep, and elk are hunted with rifle, muzzleloader, and bow in this area. During the 2000 Hunting Season in the four hunt units combined, 8,323 hunter days were spent hunting deer with a 47 percent success rate; 3,237 hunter days were spent hunting elk with a success rate of 13 percent; and 923 hunter days were spent hunting antelope with an 87 percent success rate (ODFW 2002). Fishing is a popular activity in the Planning Area with its variety of fish species including Lahontan cutthroat trout, redband trout, and several others. There are several lakes, reservoirs, streams, and rivers in the Planning Area, which provide fishing as well as sightseeing, camping, hiking, and wildlife viewing opportunities. These areas are discussed in detail in the Riparian and Wetlands, and Fisheries and Wildlife Sections (3.5.1 and 3.6).

Several hiking trails in the Planning Area are located in the CMPA. The High Desert Trail, the longest trail, also runs through the AMU. A component of the National Recreation Trails System, it begins at Denio Canyon near the Nevada border south of Fields, Oregon and is 240 miles long. The High Desert Trail uses a corridor concept with no clearly defined or maintained path to follow. Hikers choose their own route with the help of a printed guide and strategically placed cairns. Portions of the trail are open year round. The corridor is cooperatively managed with the Desert Trail Association.

Trails in the CMPA are generally open from June to late October. The Wildhorse Lake trail starts at the Steens Mountain Summit area and is 1.5 miles long from there to the high elevation lake. The trail is not maintained and is unsuitable for horses because of slick footing and dangerous cliffs. This trail had a minimum of 683 visitors in 2001 who used it for hiking/walking, backpacking, and fishing. The Little Blitzen trail starts near South Steens Campground. It is approximately nine miles in length and is maintained on a limited basis. In 2001 at least 326 trail users hiked/walked, backpacked, fished, and/or rode horses. The Big Indian trail starts at South Steens Campground. It is maintained on a limited basis and is approximately seven miles long. At least 408 people used the trail in 2001 for hiking/walking, backpacking, fishing, horseback riding and hunting. The Steens Summit trail begins near the top of Steens Summit and follows the closed road to the highest point on Steens Mountain. It is 0.5 mile in length. The Blitzen River "fishing path" begins at Page Springs Campground.

Camping occurs throughout the Planning Area, but primarily on Steens Mountain and the Alvord Desert; camping is mainly primitive and dispersed. The Alvord Desert playa, part of the Alvord Desert WSA, is a popular land sailing destination in the spring.

The season of use for the CMPA is generally from July to November, with the highest use on holiday weekends and during hunting season. The main activities include sightseeing, camping, fishing, hiking, nature study, and hunting. Other uses include picnicking, biking, photography, rock hounding, snowmobiling, cross-country skiing, and OHV use. During the winter months, vehicle access to the snow line on the North Steens Loop Road is allowed by permit only for winter recreation. Foot traffic past the locked gates does not require a permit. The developed recreation sites are used both as staging areas for dispersed uses such as hunting, hiking, and nature study, and as destination points. Steens Mountain affords spectacular geologic features and wide-open spaces where wildlife is abundant and vegetation diverse, thus providing outstanding recreation opportunities within a relatively undeveloped landscape.

The four developed campgrounds in the CMPA are Page Springs, Fish Lake, Jackman Park, and South Steens. These campgrounds include such amenities as picnic tables, drinking water, fire rings and vault toilets. In addition, there are facilities for equestrian use at South Steens and a boat ramp and fishing platform at Fish Lake. Page Springs campground is located four miles east of Frenchglen on the Steens Loop Road. The campground is adjacent to the Donner und Blitzen River at 4,200 feet. A day use area is also located here. Fish Lake campground is located 17 miles east of Frenchglen on the Steens Loop. It is located in an aspen grove at 7,400 feet. Only nonmotorized boats are allowed on Fish Lake. This campground is located on Oregon State land, but is operated and managed by the BLM through a permanent easement from the ODFW. The Jackman Park campground is a small campground located in an aspen grove three miles from Fish Lake at 7,800 feet. South Steens campground is located 18 miles east of Highway 205 on the southern leg of the Steens

Loop. The campground was built in 1996 and is located in a juniper grove at 5,300 feet. One campground loop has hitching rails and small corrals for horses. At Mann Lake, primitive camping is allowed in two areas near the shore. The recreation site has vault toilets and a boat ramp. It is located approximately 22 miles south of Highway 78 on the East Steens Road. The lake is stocked with hatchery Lahontan cutthroat trout. Boats with 12 horsepower motors or less are permitted.

The 67-mile Steens Mountain Back Country Byway (BCB) links the four developed campgrounds and seven overlooks. The BCB was traveled by 18,950 visitors to the area in 1975; 45,585 in 2000; and 47,947 in 2001.

Fees are collected at developed campgrounds from approximately April through October with the revenues returned to the site for improvements, facility maintenance, and visitor services as part of the Pilot Recreation Fee Demonstration Program, which Congress authorized in 1995. The intent of the program is to develop and test entrance and user fees to maintain and improve the natural resource, recreation facilities, and services. Participating agencies are allowed to retain all the demonstration project revenues, and at least 80 percent of the revenues are utilized at the sites where they are collected. These revenues yield substantial benefits by providing on-the-ground improvements at local recreation sites. In 2001, campground revenues were approximately $42,300.

3.19.2 Special Recreation Management Areas and Extensive Recreation Management Areas

In order to manage recreation, public land is classified as SRMAs and ERMAs. In SRMAs, recreation is under intensive management and investment in facilities and supervision. ERMAs are typically managed for more dispersed recreation with less oversight of facility development. SRMAs and ERMAs are designated through the RMP Process. The Steens Mountain Recreation Lands is an existing SRMA. Currently, the entire CMPA is managed as an SRMA. The AMU is managed as an ERMA.

Dispersed recreation opportunities exist throughout the entire Planning Area. Opportunities for developed recreation exist at several sites within the CMPA. The Lakeview to Steens BCB provides access to recreation opportunities in the Planning Area. A State Scenic Byway and several Tour Routes through the Planning Area are being considered by a Harney County Chamber of Commerce committee. Adjacent areas of interest managed by other agencies include the Malheur NWR and the Sheldon-Hart Mountain NWR. Although the majority of visitors to the Planning Area are from Oregon, an increasing number are from out of state and abroad. Recent publications and broadcasts featuring BLM attractions have increased visitation to the area.

3.19.3 Special Recreation Permits

SRPs are required for specific recreational uses of the public lands and related waters. They are issued as a means to manage visitor use, protect natural and cultural resources, and provide a mechanism to accommodate commercial recreational uses. The kinds of permits that can be issued are listed below:

1) Commercial - Recreational use of public lands and related water for business or financial gain. Examples are scenic tours, outfitters and guides, trail rides, cattle drives, photography associated with recreational activity, and use by scientific, educational, and therapeutic or nonprofit organizations when certain criteria are met.

2) Competitive - Any organized, sanctioned, or structured use, event, or activity on public lands in which two or more contestants compete and either 1) participants, register, enter or complete an application for the event, or 2) a predetermined course or area is designated. Examples are OHV races, horse endurance rides, or mountain bike races.

3) Organized group - Permits for noncommercial and noncompetitive group activities and recreation events. Examples include a scout campout, a large family reunion, or a school group activity.

4) Commercial Day Use - Special commercial permit provided by the Burns DO for use within limited locations in the Planning Area. It is a one-day permit available for commercial activities such as vehicle tours. Commercial Day Use permit stipulations are developed on a case-by-case basis.

5) Special Area - Officially designated by statute or Secretarial order. Examples include camping in long-term visitor areas in California and Arizona or floating many BLM managed rivers. An August 17, 2001 Federal Register notice designated the CMPA and the Burns DO WSAs as special areas for which permits are required for organized groups.

6) Vending - Temporary, short-term, nonexclusive, revocable authorizations to sell goods or services on public land in conjunction with a recreation activity. Examples are T-shirt sales in conjunction with an OHV race, a hot dog stand at a motocross event, firewood sales in a BLM campground, and shuttle services.

Forty SRPs were issued or active in 2001 and includes the following: 15 commercial, three organized group, two other, and 20 winter recreation permits. SRP revenues in 2001 were approximately $3,800.

3.20 Areas of Critical Environmental Concern

FLPMA and BLM policy require the BLM to give priority to designation and protection of ACECs during the land use planning process. ACECs may be nominated by BLM staff, other agencies, or members of the public at any time. ACECs are parcels of public land that require additional management attention to protect special features or values. ACECs may be established to protect important historic, cultural, or scenic values; fish, wildlife, or other natural resources; or human life and safety. RNAs are a specific type of ACEC that always contain natural resource values of scientific interest and are managed primarily for research and educational purposes. Outstanding Natural Areas are another specific type of ACEC that exhibit outstanding scenic splendor, natural wonder or scientific importance. ACEC nominations are reviewed by an ID team to determine whether they meet the relevance and importance criteria in BLM Manual 1613. Nominated ACECs that meet the relevance and importance criteria must be evaluated in a land use plan to determine whether protection is warranted.

Fifteen ACECs, nine of which are RNAs, are located in the Planning Area. These ACECs were designated to provide special management and protection to areas with special characteristics such as diverse ecosystems, landforms, plant communities, and critical wildlife habitat. The existing ACECs as well as their location and size, are listed in Table 3.23. Appendix K contains a description of each existing and proposed ACEC and their relevant and important values.

Management of the ACECs/RNAs is directed by the Andrews MFP for the entire area; the Steens Act for the CMPA; and the Wilderness Act and WSA IMP for those ACECs/RNAs located in a WSA or the Steens Mountain Wilderness. Specific direction calls for retention of existing and designation of new ACECs/RNAs where relevance and importance criteria are met and special management is required to protect the values identified.

3.21 Wilderness

The FLPMA directs the BLM to manage the public lands and their resources under principles of multiple use and sustained yield. The FLPMA also identifies wilderness values as part of the spectrum of public land resource values and uses to be considered in the BLM's planning, inventory and management activities. A BLM wilderness area is an area of public lands that Congress has designated for the BLM to manage as a component of the National Wilderness Preservation System in accordance with the Wilderness Act of 1964. A WSA is a parcel of public land determined through intensive inventories to meet the definition of wilderness in Section 2(c) of the Wilderness Act.

Public lands were inventoried in the early 1980s to determine whether they contained wilderness characteristics. Those areas found to have wilderness characteristics were identified as WSAs and all other land was eliminated from further consideration in the wilderness review. Some of the criteria used in the wilderness inventory and study were naturalness, solitude, primitive and unconfined recreational opportunities, special features, and manageability.

The Steens Act established the Steens Mountain Wilderness consisting of 170,084 acres of public land. Within the Steens Mountain Wilderness (Map 2.18) is a No Livestock Grazing Area consisting of 97,229 acres of public land, creating the first livestock-free wilderness in the United States. Subject to valid existing rights, the BLM will administer the Steens Mountain Wilderness in accordance with the provisions of the Wilderness Act, BLM Wilderness Regulations (43 CFR 6300), BLM Manual Handbook H-8560-1 Management of Designated Wilderness Areas, and the Steens Act.

Table 3.23: Areas Of Critical Environmental Concern in the Planning Area

ACEC	Located in Withdrawal Area	Location	Acres
Alvord Desert ACEC	Yes	AMU	17,933
Alvord Peak ACEC	Yes	CMPA	15,015
Borax Lake ACEC	Yes	AMU	520

Pickett Rim ACEC	No	AMU	3,941
Steens Mountain ACEC	Yes	CMPA	56,187
Kiger Mustang ACEC[1]	Yes[1]	CMPA	31,859
East Kiger Plateau RNA/ACEC	Yes	CMPA	1,216
Little Blitzen RNA/ACEC	Yes	CMPA	2,530
Little Wildhorse Lake RNA/ACEC	Yes	CMPA	241
Long Draw RNA/ACEC	No	AMU	441
Mickey Basin RNA/ACEC	Yes	AMU	560
Pueblo Foothills RNA/ACEC	No	AMU	2,503
Rooster Comb RNA/ACEC	Yes	CMPA	716
South Fork Willow Creek RNA/ACEC	Yes	CMPA	231
Tum Tum Lake RNA/ACEC	No	AMU	2,064

[1]Part of the Kiger Mustang ACEC is in the Mineral Withdrawal Area and the CMPA (31,859 acres), and the rest is in the Three Rivers RA.

The Projects for Implementation EA authorized the removal of numerous fences used in livestock management which will be not utilized in the No Livestock Grazing Area after the 2003 grazing season. In addition, the EA will allow the construction of new fences for managing the No Livestock Grazing Area within the wilderness.

Specific wilderness management provisions are included in Section 202 of the Steens Act :

> (a) GENERAL RULE. - The Secretary shall administer the Steens Mountain Wilderness in accordance with this title and the Wilderness Act (16 U.S.C. 1131 et seq.). Any reference in the Wilderness Act to the effective date of that Act (or any similar reference) shall be deemed to be a reference to the date of the enactment of this Act.
>
> (b) WILDERNESS BOUNDARIES ALONG ROADS. – Where a wilderness boundary exists along a road, the wilderness boundary shall be set back from the centerline of the road, consistent with the BLM's guidelines as established in its Wilderness Management Policy.
>
> (c) ACCESS TO NON-FEDERAL LANDS. – The Secretary shall provide reasonable access to private lands within the boundaries of the Wilderness Area, as provided in section 112(d).

Section 112(e)(1) of the Steens Act states that "The Secretary shall provide reasonable access to nonfederally owned lands or interests in land within the boundaries of the Cooperative Management and Protection Area and the Wilderness Area to provide the owner of the land or interest the reasonable use thereof."

The road setbacks for wilderness boundaries are described in Section 3.18 of this document.

Except for the designated No Livestock Grazing Area, grazing of livestock will continue and be administered in accordance with section 4(d)(4) of the Wilderness Act, the Steens Act, and the guidelines set forth in Appendix A of House Report 101-405 of the 101st Congress.

Provisions of the general BLM wilderness policy in BLM Manual 8560 are as follows:

> 1. To provide for the long term protection and preservation of the area's wilderness characteristics under a principle of nondegradation. The area's natural condition, opportunities for solitude, opportunities for primitive and unconfined recreation, and any ecological, geological or other features of scientific, educational, scenic, or historical value present will be managed so that they will remain unimpaired.

2. To manage the area for the use and enjoyment of visitors in a manner that will leave the area unimpaired for future use and enjoyment as wilderness. The wilderness resources will be the dominant consideration where a choice must be made between preservation of the wilderness characteristics and visitor use.

3. To manage the area using the minimum tool, equipment, or structure necessary to successfully, safely, and economically accomplish the objectives. The chosen tool, equipment, or structure will be the one that least degrades wilderness values temporarily or permanently.

4. To manage nonconforming but acceptable uses permitted by the Wilderness Act and subsequent laws in a manner that will prevent unnecessary or undue degradation of the area's wilderness characteristics and with overall emphasis placed on retaining wilderness characteristics. Proposed actions that may affect wilderness characteristics will be assessed through the appropriate NEPA analysis.

5. The BLM will only approve that combination of routes and nonmotorized modes of travel to nonfederal inholdings that the BLM determines will serve the reasonable purposes for which the nonfederal lands are held or used and cause the least impact on wilderness characteristics.

Except as specifically stated in the Wilderness Act, the following are also prohibited in wilderness (CFR 6310):

- Operate a commercial enterprise;
- Build temporary or permanent roads;
- Build aircraft landing strips, heliports, or helispots;
- Use motorized equipment; or motor vehicles, motorboats, or other forms of mechanical transport;
- Land aircraft, or drop or pick up any material, supplies or person by means of aircraft, including a helicopter, hangglider, hot air balloon, parasail, or parachute;
- Build, install, or erect structures or installations, including transmission lines, motels, vacation homes, sheds, stores, resorts, organization camps, hunting and fishing lodges, electronic installations, and similar structures, other than tents, tarpaulins, temporary corrals, and similar devices for overnight camping;
- Cut trees;
- Enter or use wilderness areas without authorization, where the BLM requires authorization;
- Engage or participate in competitive use, including those activities involving physical endurance of a person or animal, foot races, watercraft races, survival exercises, war games, or other similar exercises; or
- Violate any BLM regulation, authorization, or order.

3.22 Wilderness Study Areas

Until Congress acts on the wilderness recommendations or otherwise releases the existing WSAs for other purposes, they will continue to be managed in accordance with the WSA IMP, the FLPMA, and other applicable laws and policies.

All or portions of 23 WSAs are located within the Planning Area (Table 3.24). The WSAs were modified to account for designation of the Steens Mountain Wilderness in October of 2000. A 3,267-acre parcel in the Bridge Creek and Blitzen River WSAs was released from the management requirements of section 603(c) of the FLPMA under the provisions of the Steens Act and is no longer subject to the WSA IMP. Otherwise, as stated in the Steens Act, "any wilderness study area, or portion of a wilderness study area, within the boundaries of the Cooperative Management and Protection Area, but not included in the Steens Mountain Wilderness, shall remain a wilderness study area." The Steens Act also added 3,840 acres to the Basque Hills WSA.

Management of existing WSAs in the CMPA will continue as directed under the WSA IMP, the Steens Act, and the FLPMA.

Table 3.24: Wilderness Study Areas in the Planning Area

AMU Wilderness Study Areas	Acres	CMPA Wilderness Study Areas	Acres
Alvord Desert	97,760	Blitzen River	31,737
Basque Hills	72,082	Bridge Creek	14,284

AMU Wilderness Study Areas	Acres	CMPA Wilderness Study Areas	Acres
Blitzen River	165	High Steens	13,227
Disaster Peak	3,672	Home Creek	1,165
East Alvord	22,161	Lower Stonehouse	7,449
Hawk Mountain	24,226	South Fork Donner und Blitzen	27,969
Heath Lake	21,197	Stonehouse	22,765
High Steens	739		
Mahogany Ridge	27,053		
Pueblo Mountains	73,547		
Red Mountain	15,659		
Rincon	104,979		
Sheepshead	21,679		
Table Mountain	39,886		
West Peak	8,598		
Wildcat Canyon	8,543		
Willow Creek	2,424		
Winter Range	15,517		
TOTAL	**559,887**	**TOTAL**	**118,596**

3.23 Wild and Scenic Rivers

There are currently three WSRs in the Planning Area, all located within the CMPA. The Donner und Blitzen WSR was designated as "wild" in October 1988 when Congress passed the Omnibus Oregon Wild and Scenic Rivers Act of 1988; the management plan was completed in 1993 (USDI 1993a). The Donner und Blitzen WSR is located within the CMPA and is made up of the following segments; Donner und Blitzen River, Fish Creek, Little Blitzen River, Big Indian Creek, Little Indian Creek, and South Fork Donner und Blitzen River. In 2000, the Steens Act expanded the WSR system by adding three segments to the Donner und Blitzen WSR and designating two new WSRs. "Wild" segments added to the Donner und Blitzen WSR are Ankle Creek (8.10 miles), South Fork of Ankle Creek (1.60 miles), and Mud Creek (5.10 miles). New "wild" rivers are Kiger Creek (4.25 miles) and Wildhorse Creek (two segments - 7.36 miles of Wildhorse Creek and 2.60 miles of Little Wildhorse Creek). These additions bring the total number of miles of WSR to 101.7. The total area within all the WSR corridors including public, state, and private land is 31,482 acres.

The ORVs associated with the Donner und Blitzen WSR include scenic qualities, geologic features, recreation opportunities, native fisheries habitat, abundant wildlife, a wide variety of vegetation communities, a large number of special status plant species, and historic cultural resources.

Kiger, Wildhorse and Little Wildhorse Creeks are also characterized by several ORVs. Wildhorse and Little Wildhorse Creek ORVs include scenic quality, recreation, wildlife habitat diversity, and the presence of special status plant species. The ORVs associated with Kiger Creek include scenic geologic features, diversity of wildlife habitat, and the presence of special status fish species. Ankle and Mud Creek ORVs would be the same as for the Donner und Blitzen WSR as these were new segments added to the existing WSR management plan, as stated in the Steens Act.

WSRs in the CMPA are generally available for recreational visitor use from June to late October. Nearly all the visitor use is from hiking, fishing, hunting and backpacking along the river corridors Visitor use numbers available to date for WSR's are the same as for trails in the CMPA, as those trails are the same as those used to visit the WSR corridors, and are described in the recreation activities section for Little Blitzen River, Big Indian Creek, and Wildhorse Creek. The Blitzen crossing area is utilized for fishing, hunting, hiking, and very occasional rafting. Approximately 300 to 500

visitor use days occur from June to late October annually. There are very limited visitor use data for Fish Creek, Mud Creek, and Ankle Creek, but use levels are lower than those of the big gorges of Little Blitzen River and Big Indian Creek. Page Springs Campground is open year-round and is the trailhead for visiting the north end of the Donner und Blitzen River. Approximately 1,500 visitor use days occur annually from the Page Springs Campground, but most visitors only travel about a mile up the river because the dense vegetation and lack of a defined trail hinders most visitors from traveling further.

The Donner und Blitzen WSR and the newly designated WSRs are managed in accordance with the Steens Act, the WSR Act, the Wilderness Act, the WSA IMP, and the IMP. In instances where management requirements for a stream segment described in the Steens Act differ between the WSR Act and the Steens Mountain Wilderness, the more restrictive requirements apply. The Donner und Blitzen National WSR Management Plan also continues to guide management of the Donner und Blitzen WSR, to the extent that the management plan is consistent with the Steens Act.

All rivers in the Andrews RA were evaluated for WSR eligibility in 1997 for the SEORMP. Eligible rivers that were not designated as WSRs by the Steens Act are listed below with their river mileage, classification and ORVs:

- Big Alvord Creek - 6.3 miles wild, ORVs are wildlife and botanic;
- Willow Creek - 6.2 miles wild, ORVs are botanic;
- Threemile Creek - 4.3 miles scenic, ORVs are fish and cultural;
- Pike Creek - 4.2 miles scenic, ORVs are wildlife;
- Mud Creek - 7.2 miles scenic, ORVs are botanic;
- McCoy Creek- 30.8 miles scenic, ORVs are wildlife;
- Home Creek- 5.5 miles scenic, ORVs are scenic, recreational, and fish;
- Kiger Creek- 14.25 miles scenic, ORVs are scenic, fish, and wildlife;
- Cottonwood Creek - 12.1 miles scenic, ORVs are botanic;
- Van Horn Creek- 9.9 miles scenic, ORVs are recreational; and
- Big Trout Creek - 20.3 miles scenic, ORVs are scenic.

These eligible rivers are generally available for recreational visitor use from April to November depending on the elevation and time of the year. Although visitor use data are limited for these eligible rivers, visitor use is primarily from hiking, backpacking, hunting and fishing and generally receives dispersed visitor use at a lower level than what the CMPA WSRs.

These eligible rivers and creeks have been evaluated for WSR suitability and are included as Appendix N.

3.24 Environmental Justice

The area under study for environmental justice includes the Planning Area, as well as other portions of Harney County.

Minority Population
Table 3.16 summarizes the ethnic composition of the Planning Area, Harney County, and the State of Oregon. Most notable is the higher percentage of American Indians in Harney County, particularly the northern portion of the County (Burns CCD and Drewsey CCD) compared to the State of Oregon. For Oregon, the American Indian population constitutes approximately 1.3 percent of the total. However, in Harney County the percentage is four percent. The percentage of American Indians in the Planning Area, as represented by the Diamond CCD, is 0.8 percent, which is substantially lower than the rest of Harney County and the State of Oregon.

In accordance with EPA's Environmental Justice Guidelines (EPA 1998), these minority populations should be identified when either:

- The minority population of the affected area exceeds 50 percent; or
- The minority population of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis.

The population of American Indians does not exceed 50 percent, and the population of American Indians occurring in the Planning Area, as represented by the Diamond CCD, is not "meaningfully greater" than the minority population in

the general population, in this case, the State of Oregon. Therefore, for the purposes of screening for environmental justice concerns, the identified populations defined in EPA's guidance (EPA 1998) do not exist within the Planning Area.

Low-Income Populations
The median incomes for the population living in the Harney County area are lower than those in the State of Oregon (see Section 3.12.4). Analysis of the percentage of persons below the poverty level for the State of Oregon and Harney County reveals that they are about the same. These data indicate that a low-income population group, as defined in EPA's guidance (EPA 1998), for the purposes of screening for environmental justice concerns, is not present in the Planning Area.

Based on the above assessment, there could not be disproportional impacts to minority or low-income populations. Although there are no identified populations within the Planning Area, as defined by EPA criteria, there is a potential for impacts to the American Indians should any of the actions impact areas of traditional use. The American Indian population and the Burns Paiute Tribe have not identified any traditional use areas to the BLM within the Planning Area. There is no known potential for anticipated disproportional effects on minority or economically disadvantaged populations within the Planning Area; therefore, Environmental Justice is not further analyzed in the RMP/EIS.